NEC

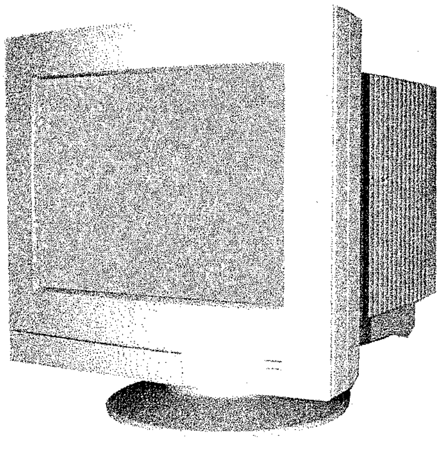
MODEL JC-1521HMB/B(EE)/R(N),(H)

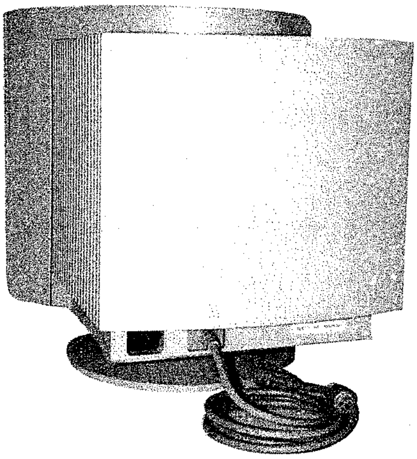
COLOR MONITOR MultiSync 3FG
SERVICE MANUAL

PART NO 599910331

Better Service
Better Reputation
Better Profit

VIDE-V16621





NEC Corporation
TOKYO, JAPAN

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SPECIFICATIONS

Electrical Description

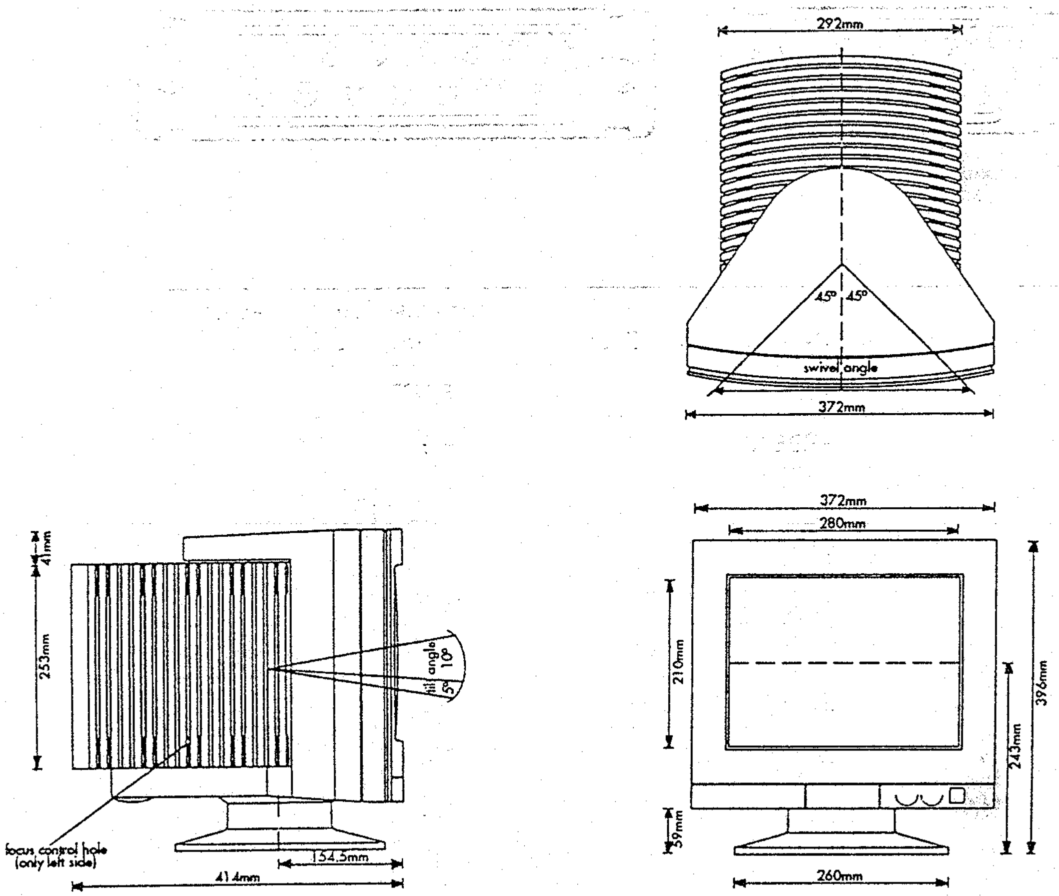
Picture Tube	15 inch flat square CRT, 1200 mm radius 90 degree defection, 0.28 mm Trio dot pitch Dot type black matrix Medium-short persistence phosphor, dark bulb, glass with anti-static coating		
Input Signal	Video:	ANALOG 0.7 Vp-p 75 Ohms Positive	
	Sync:	Separate Sync TTL Level	
		Horizontal sync	Positive/Negative
		Vertical sync	Positive/Negative
		Composite sync TTL Level	Positive/Negative
Display Colors	Analog Input:	Unlimited colors (Depends on the graphics Board)	
Synchronization Range	Horizontal:	31.5 kHz to 38 kHz (Automatically)	
	Vertical:	55 Hz to 90 Hz (Automatically)	
Resolution	Horizontal:	1024 dots (interlaced)	
	Vertical:	768 Lines (interlaced)	
Video Band Width	45 MHz		
Active Display Area (Factory Setting)	Horizontal:	260 mm (Active display area is dependent upon the signal timing)	
	Vertical:	195 mm (Active display area is dependent upon the signal timing)	
Misconvergence	Less than 0.5 mm		
Rated Voltage	AC 220–240 V, 50/60 Hz		
Rated Current	0.8 A		
Environmental Considerations	Operating	Temperature 0°C to +40°C	
		Humidity 30% to 80%	
	Storage	Temperature −20°C to +60°C	
		Humidity 10% to 90%	

NOTE: The above specifications are subject to change without notice for further improvement.

Mechanical Description

1. Cabinet	Molded plastic cabinet with detachable tilt/swivel base.
2. Dimensions	372 (W) × 396 (H) × 414 (D) mm

Dimensions and tilt/swivel angle

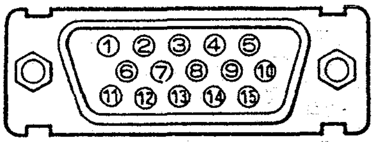

292mm
45°
45°
swivel angle
372mm
41mm
253mm
tilt angle
10°
5°
focus control hole (only left side)
154.5mm
414mm
372mm
280mm
210mm
243mm
396mm
59mm
260mm

3. Weight	17.3 kg
4. Controls	Side Pincushion Control Vertical Size Control Horizontal Size control Vertical Position Control Horizontal Position Control Degauss Switch Contrast Control Brightness Control Power Switch
5. Input Signal Terminal	15 pin mini D-Sub connector 15 Pin D-Sub connector (with ADAPTER for Macintosh II) (See page 3 for Pin Assignment Table)

Pin Assignment Table

D-SUB INPUT

15 pin mini D-Sub



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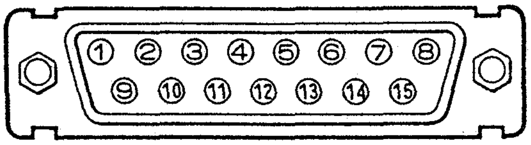
⑮

15 pin D-Sub



①
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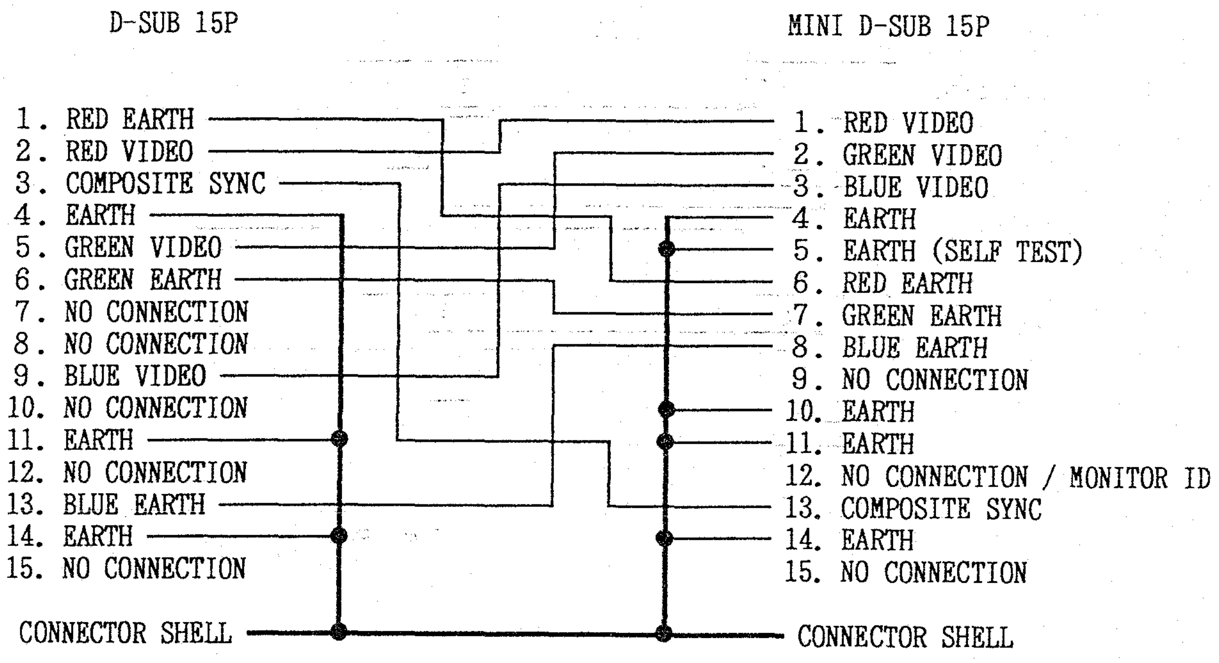
⑮

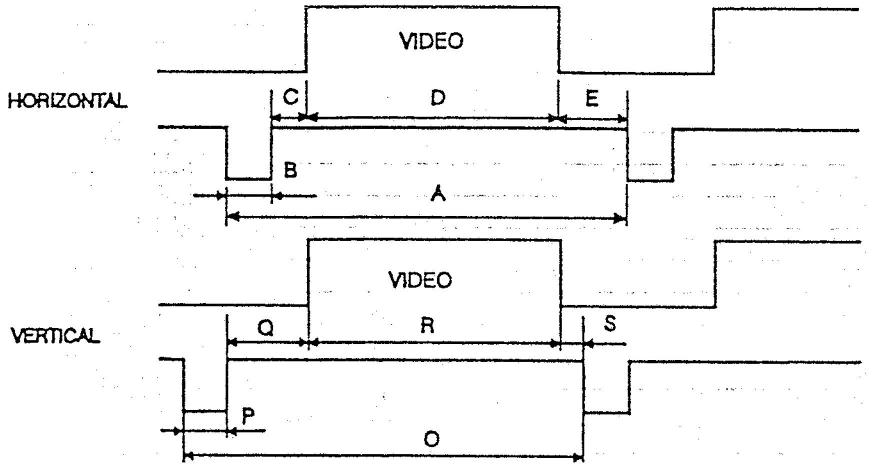
Pin No.	VGA/8514/A 15 pin min D-Sub	Macintosh II with Adapter 15 pin D-Sub
1	RED	EARTH
2	GREEN	RED
3	BLUE	H/V COMP SYNC
4	EARTH	EARTH
5	SELF TEST	GREEN
6	EARTH	EARTH
7	EARTH	NC
8	EARTH	NC
9	NC	BLUE
10	EARTH	NC
11	EARTH	EARTH
12	NC	NC
13	H SYNC	EARTH
14	V SYNC	EARTH
15	NC	NC

Optional EG/MAC Ⅱ Cable Adapter's Pin Assignment


D-SUB 15P
1. RED EARTH
2. RED VIDEO
3. COMPOSITE SYNC
4. EARTH
5. GREEN VIDEO
6. GREEN EARTH
7. NO CONNECTION
8. NO CONNECTION
9. BLUE VIDEO
10. NO CONNECTION
11. EARTH
12. NO CONNECTION
13. BLUE EARTH
14. EARTH
15. NO CONNECTION
CONNECTOR SHELL
MINI D-SUB 15P
1. RED VIDEO
2. GREEN VIDEO
3. BLUE VIDEO
4. EARTH
5. EARTH (SELF TEST)
6. RED EARTH
7. GREEN EARTH
8. BLUE EARTH
9. NO CONNECTION
10. EARTH
11. EARTH
12. NO CONNECTION / MONITOR ID
13. COMPOSITE SYNC
14. EARTH
15. NO CONNECTION
CONNECTOR SHELL

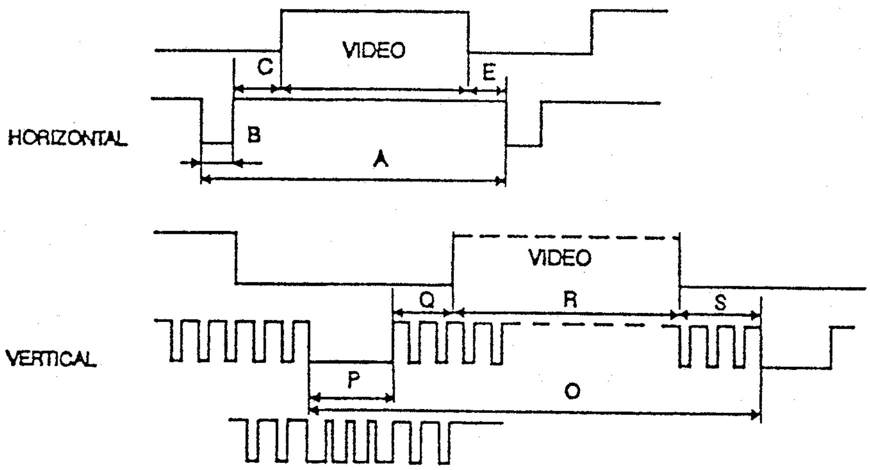
Signal Timing

SEPARATE SYNC


VIDEO
HORIZONTAL
C
D
E
B
A
VIDEO
VERTICAL
Q
R
S
P
O

Sync Polarity: Positive/Negative

COMPOSITE SYNC


VIDEO
C
E
HORIZONTAL
B
A
VIDEO
Q
R
S
VERTICAL
P
O

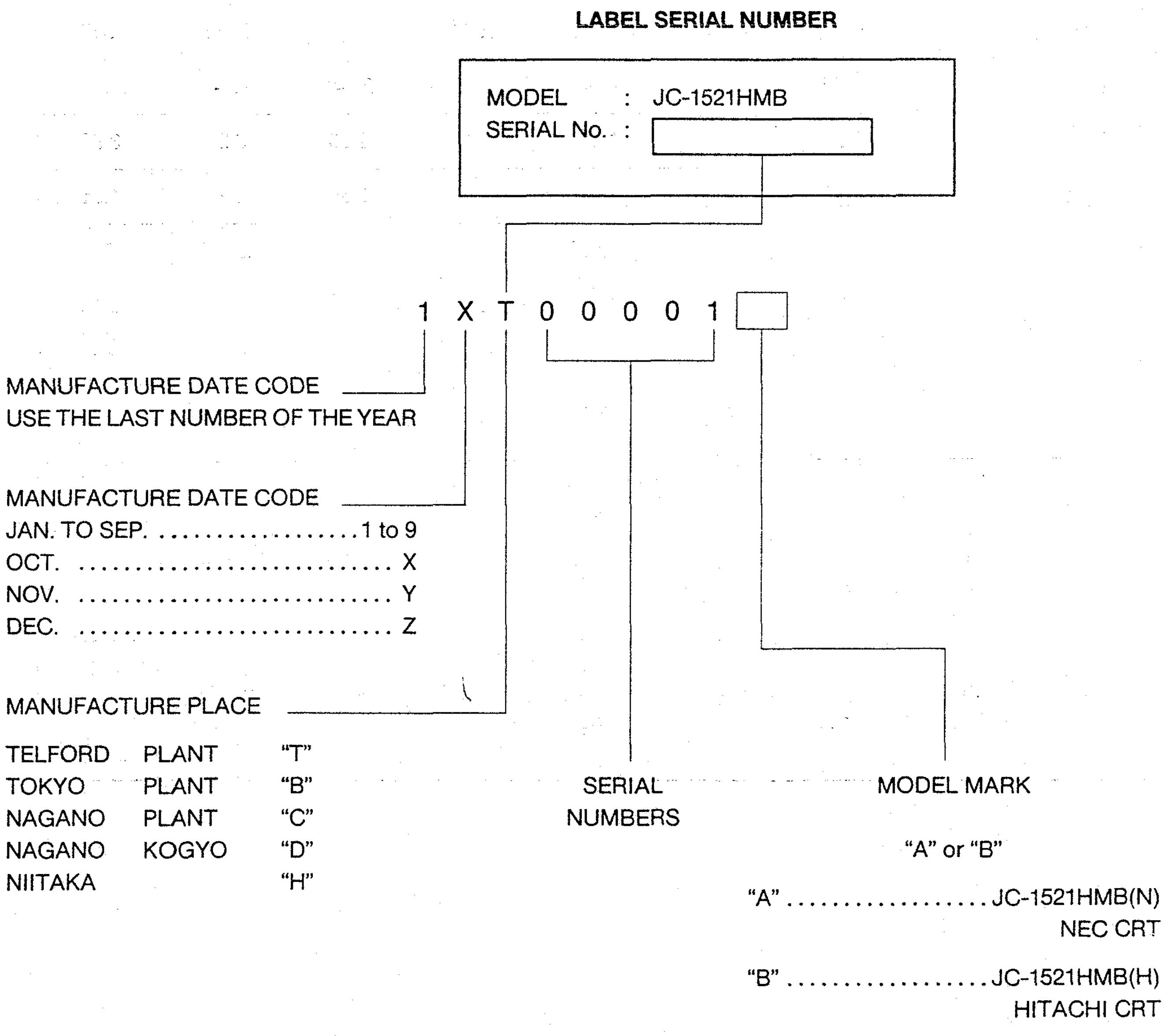
Sync Polarity: Positive/Negative

Preset Timing

	VGA/MCGA compatible			640×480 at 72 Hz	Macintosh II	800×600 at 56 Hz	800×600 at 60 Hz	8514/A & XGA
f_H kHz	31.47			37.86	35.00	35.16	37.88	35.52
A μs	31.78			26.41	28.57	28.44	26.40	28.15
B μs	3.81			1.27	2.12	2.00	3.20	3.92
C μs	1.91			4.06	3.17	3.56	2.20	1.25
D μs	25.42			20.32	21.16	22.22	20.00	22.81
E μs	0.64			0.76	2.12	0.67	1.00	0.18
fv Hz	70.09		59.94	72.81	66.67	56.25	60.32	86.96
O ms	14.27	14.27	16.68	13.74	15.00	17.78	16.58	11.50
P ms	0.06	0.06	0.06	0.08	0.09	0.06	0.106	0.113
Q ms	1.91	1.11	1.05	0.74	1.11	0.63	0.607	0.557/0.563
R ms	11.12	12.71	15.25	12.68	13.71	17.07	15.84	10.81
S ms	1.18	0.38	0.32	0.24	0.09	0.03	0.026	0/0.014
Remarks	Analog Video	Analog Video	Analog Video	Analog Video	Analog Video	Analog Video	Analog Video	Analog Video interlaced

SERIAL NUMBER INFORMATION

Refer to the serial number information shown below.


LABEL SERIAL NUMBER
MODEL : JC-1521HMB
SERIAL No. :
1 X T 0 0 0 0 1

MANUFACTURE DATE CODE
USE THE LAST NUMBER OF THE YEAR

MANUFACTURE DATE CODE

JAN. TO SEP.	1 to 9
OCT.	X
NOV.	Y
DEC.	Z

MANUFACTURE PLACE

TELFORD	PLANT	"T"
TOKYO	PLANT	"B"
NAGANO	PLANT	"C"
NAGANO	KOGYO	"D"
NIITAKA		"H"

SERIAL NUMBERS

MODEL MARK

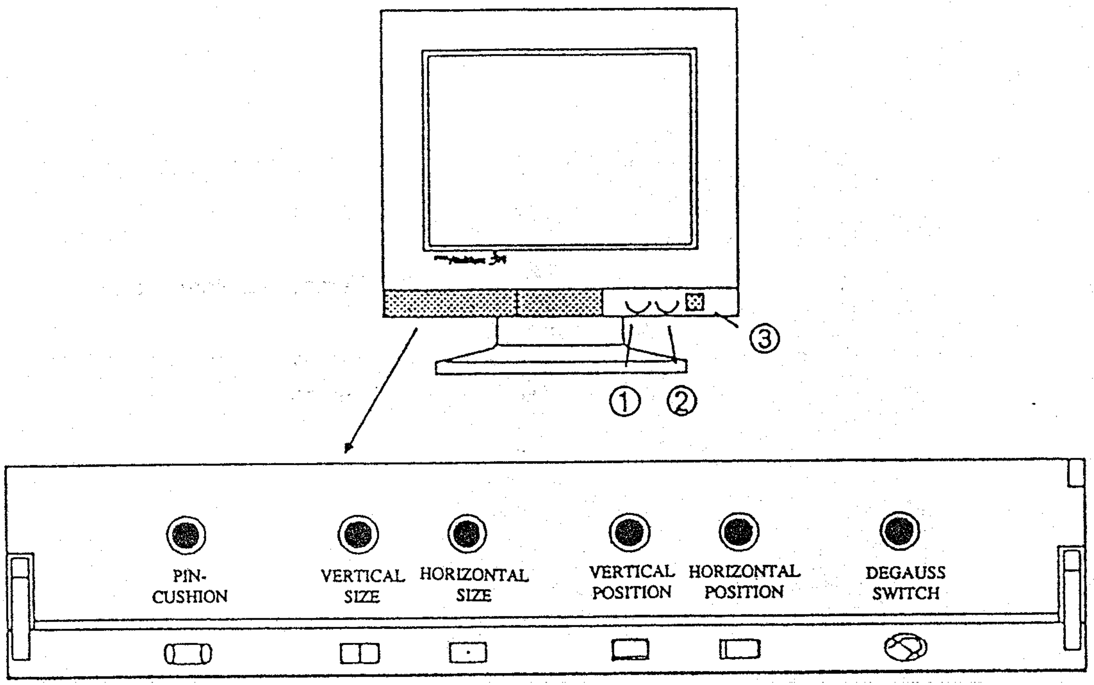
"A" or "B"

"A" .... JC-1521HMB(N)
NEC CRT

"B" .... JC-1521HMB(H)
HITACHI CRT

NOTE: MODEL JC-1521HMB(EE) and JC-1521HMR comply with the above.

MONITOR ADJUSTMENT CONTROLS


③
① ②
PIN-CUSHION
VERTICAL SIZE
HORIZONTAL SIZE
VERTICAL POSITION
HORIZONTAL POSITION
DEGAUSS SWITCH

Side Pincushion Control
Adjust the appearance of curved edges of the display image either inwards or outwards.

Vertical Size Control
Adjust the vertical size of the image.

Horizontal Size Control
Adjust the horizontal size of the image.

Vertical Position Control
Adjust the vertical position of the image up and down.

Horizontal Position Control
Adjust the horizontal position of the image from left to right.

Degauss
Eliminate stray magnetic fields that alter the correct scan of the electronic beams.

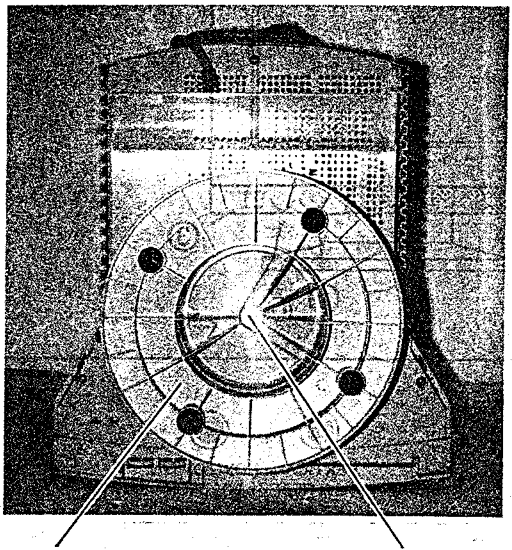
① **Contrast Control**
Adjust the image brightness in relation to the background.

② **Brightness Control**
Adjust the overall image and screen brightness.

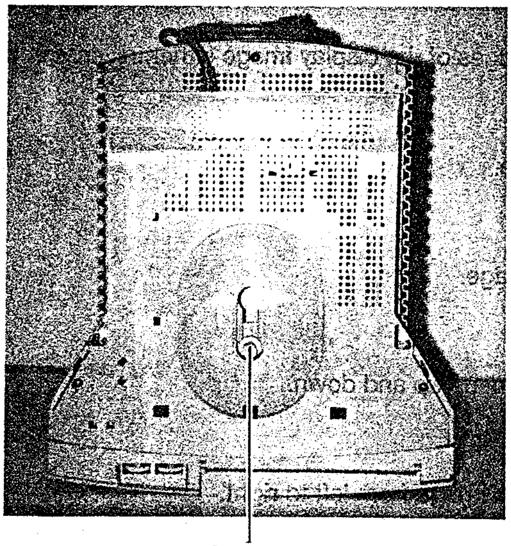
③ **Power Switch**
Turn the power ON or OFF. When the power is ON, the LED power indicator is lit.

DISASSEMBLY

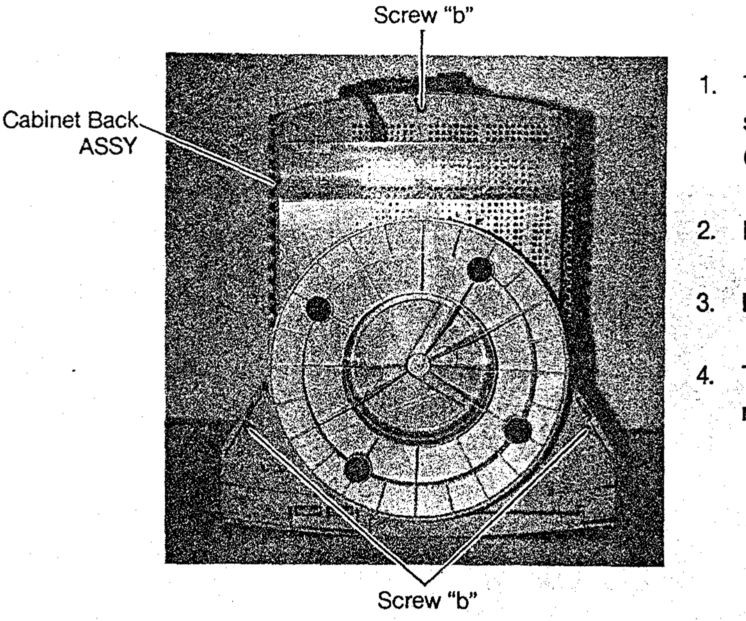
Revolving Stand Assy


Revolving Stand ASSY
Screw "a"

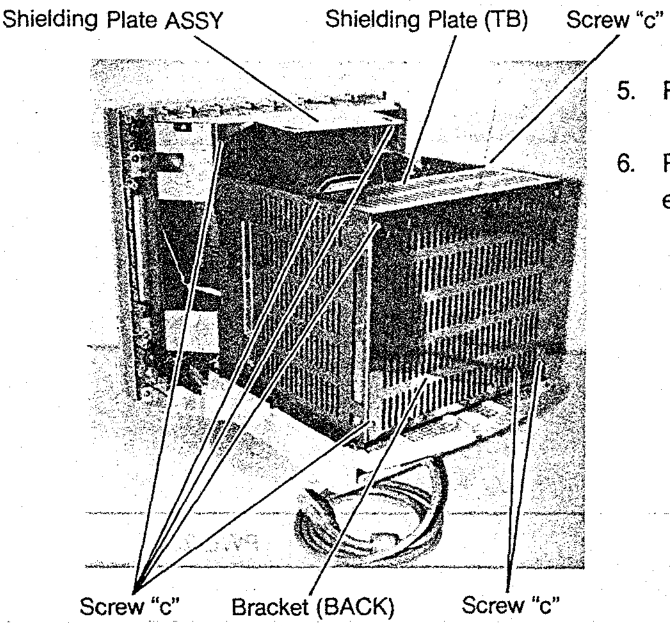
1. Turn the monitor CRT face down on a clean static free surface to prevent scratching CRT face.
2. Remove the screw "a".
3. Remove the Revolving Stand ASSY from the monitor.



Cabinet Back Assy and Shielding Plates

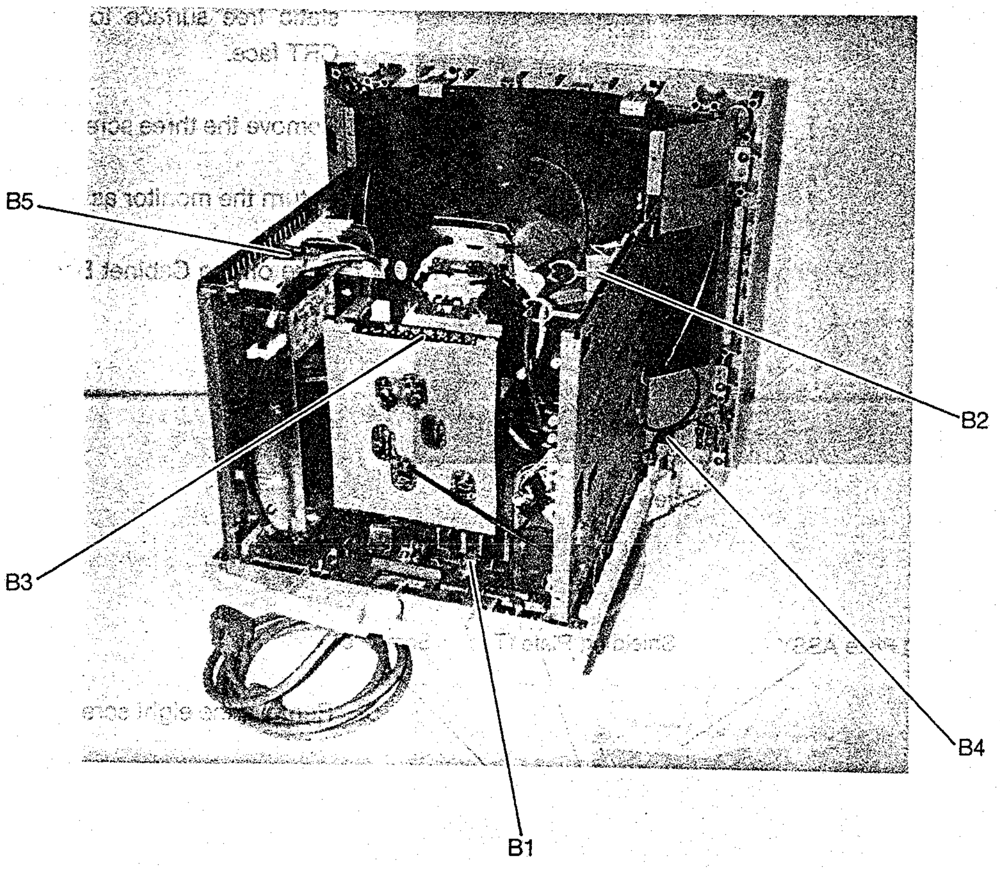

Screw "b"
Cabinet Back ASSY
Screw "b"

1. Turn the monitor CRT face down on a clean static free surface to prevent scratching CRT face.
2. Remove the three screws "b"
3. Return the monitor as normal.
4. Take off the Cabinet Back ASSY from the monitor.


Shielding Plate ASSY
Shielding Plate (TB)
Screw "c"
Screw "c"
Bracket (BACK)
Screw "c"

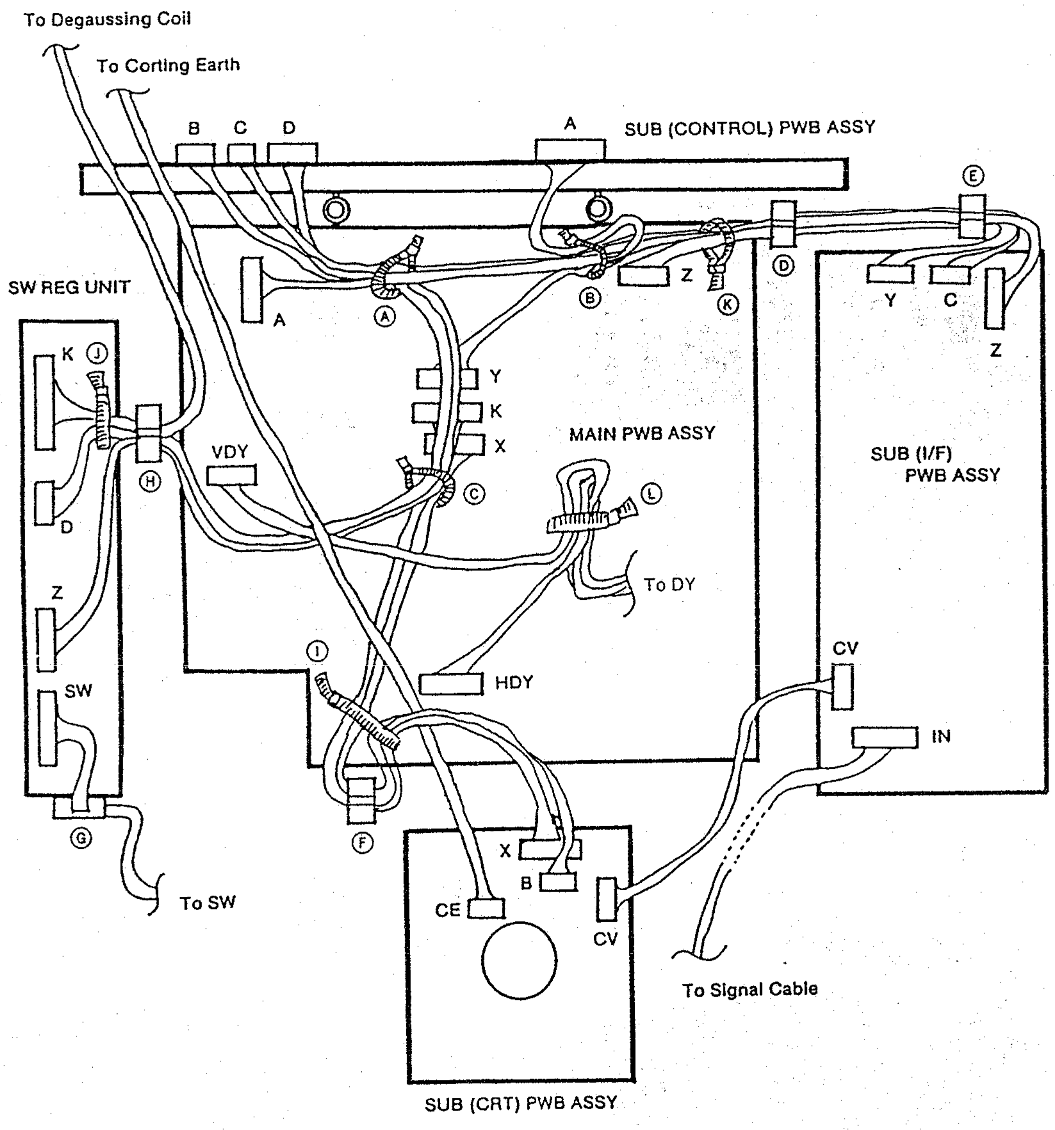
5. Remove the eight screws "c".
6. Remove the Shielding Plate (TB), the Bracket (BACK) and the Shielding Plate ASSY.

PWB ASSY LOCATION DIAGRAM



B1	MAIN PWB ASSY	PWE-321
B2	SUB (I/F) PWB ASSY	PWE-322A
B3	SUB (CRT) PWB ASSY	PWE-322B
B4	SUB (CONTROL) PWB ASSY	PWE-322C
B5	SW REG UNIT	SMP-120BB-1

WIRING DIAGRAM


To Degaussing Coil
To Corting Earth
B
C
D
A
SUB (CONTROL) PWB ASSY
Ⓔ
SW REG UNIT
K
Ⓙ
D
Z
SW
Ⓗ
Ⓖ
To SW
A
Ⓐ
Ⓑ
Z
Ⓚ
Ⓓ
Y
K
X
Ⓒ
VDY
MAIN PWB ASSY
Ⓛ
To DY
Ⓘ
HDY
Ⓕ
Y
C
Z
SUB (I/F) PWB ASSY
CV
IN
X
B
CE
CV
To Signal Cable
SUB (CRT) PWB ASSY

Band Ⓐ A, B, C, D

Band Ⓑ A, C, Y

Band Ⓒ B, D, K, X

Wire Clamp Ⓓ C, Y, Z

Wire Clamp Ⓔ C, Y, Z

Wire Clamp Ⓕ B, X

Wire Clamp Ⓖ SW

Wire Clamp Ⓗ D, K, Z

Band Ⓘ B, X

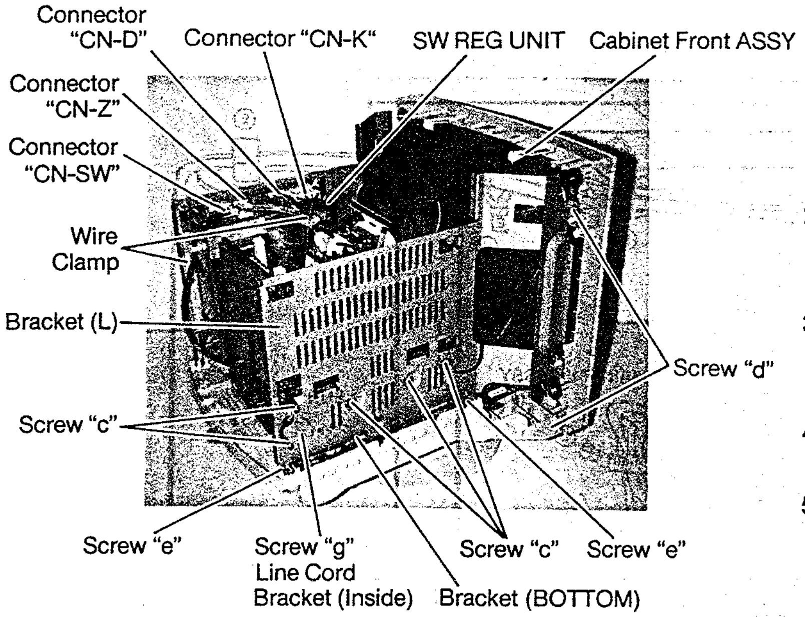
Band Ⓙ D, K

Band Ⓚ C, Z

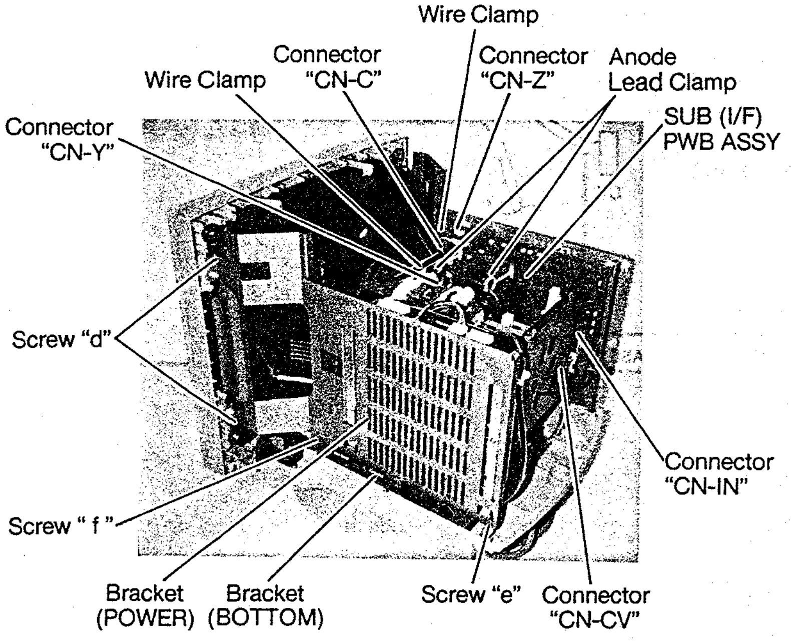
Band Ⓧ HDY, VDY

DISASSEMBLY OF BOARDS

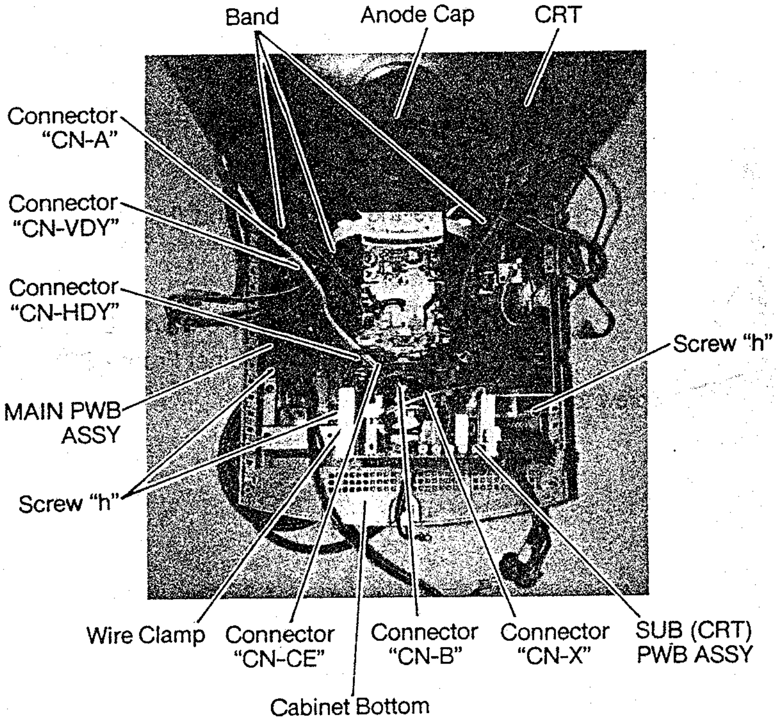
MAIN PWB ASSY and SUB (CRT) PWB ASSY


Connector "CN-D"
Connector "CN-K"
SW REG UNIT
Cabinet Front ASSY
Connector "CN-Z"
Connector "CN-SW"
Wire Clamp
Bracket (L)
Screw "d"
Screw "c"
Screw "e"
Screw "g" Line Cord Bracket (Inside)
Screw "c"
Screw "e"
Bracket (BOTTOM)

1. Remove the five screws "c", the two screws "e" and the two screws "d".
2. Remove the screw "g" and the Line Cord Bracket (Inside).
3. Pull the Bracket (L) from the Bracket (BOTTOM) and the Cabinet Front ASSY.
4. Untie the wires from the Clamps.
5. Disconnect the connectors "CN-SW", "CN-Z", "CN-D" and "CN-K" from the SW REG UNIT.


Wire Clamp
Connector "CN-C"
Wire Clamp
Connector "CN-Z"
Anode Lead Clamp
SUB (I/F) PWB ASSY
Connector "CN-Y"
Screw "d"
Connector "CN-IN"
Screw " f "
Bracket (POWER)
Bracket (BOTTOM)
Screw "e"
Connector "CN-CV"

6. Remove the screw "e", the screw "f" and two screws "d".
7. Pull the Bracket (POWER) from the Bracket (BOTTOM) and the Cabinet Front ASSY.
8. Remove the Bracket (POWER) from the monitor.
9. Untie the anode wire from the Clamps.
10. Disconnect the connectors "CN-IN", "CN-CV", "CN-Z", "CN-C" and "CN-Y" from the SUB (I/F) PWB ASSY.
11. Untie the wires from the Clamps.
12. Remove the Bracket (L) from the monitor.


Band
Anode Cap
CRT
Connector "CN-A"
Connector "CN-VDY"
Connector "CN-HDY"
Screw "h"
MAIN PWB ASSY
Screw "h"
Wire Clamp
Connector "CN-CE"
Connector "CN-B"
Connector "CN-X"
SUB (CRT) PWB ASSY
Cabinet Bottom

13. Remove the three screws "h".

14. Remove the Anode Cap from the CRT.

    NOTE:

    Carefully discharge the CRT anode by shorting it to earth before removing Anode Cap.

15. Disconnect the SUB (CRT) PWB ASSY from the CRT.

16. Pull the MAIN PWB ASSY backward to the rear.

17. Cut the three bands.

    (For details, see page 12 for WIRING DIAGRAM.)

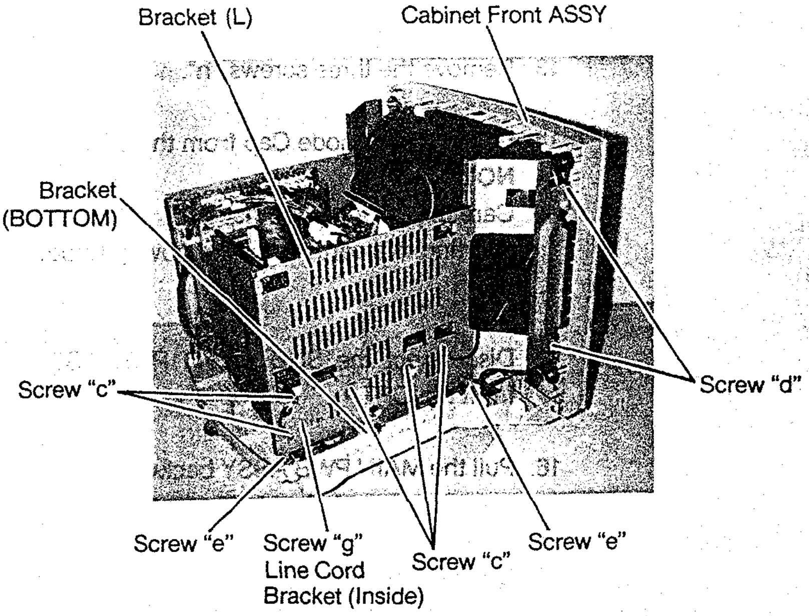
18. Disconnect the connectors "CN-CE", "CN-B" and "CN-X" from the SUB (CRT) PWB ASSY.

19. Untie the wires from the Clamp.

20. Disconnect the connectors "CN-HDY", "CN-VDY" and "CN-A" from the MAIN PWB ASSY.

21. Remove the MAIN PWB ASSY and SUB (CRT) PWB ASSY from the Cabinet Bottom.

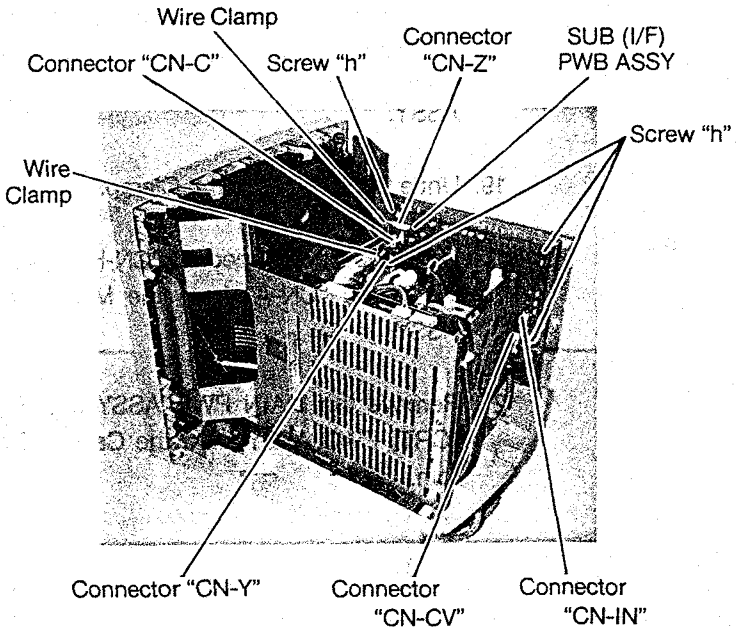
SUB (I/F) PWB ASSY


Bracket (L)
Cabinet Front ASSY
Bracket (BOTTOM)
Screw "c"
Screw "d"
Screw "e"
Screw "g" Line Cord Bracket (Inside)
Screw "c"
Screw "e"

1. Remove the five screws "c", the two screws "e" and the two screws "d".

2. Remove the screw "g" and the Line Cord Bracket (Inside).

3. Pull the Bracket (L) from the Bracket (BOTTOM) and the Cabinet Front ASSY.


Wire Clamp
Connector "CN-C"
Screw "h"
Connector "CN-Z"
SUB (I/F) PWB ASSY
Screw "h"
Wire Clamp
Connector "CN-Y"
Connector "CN-CV"
Connector "CN-IN"

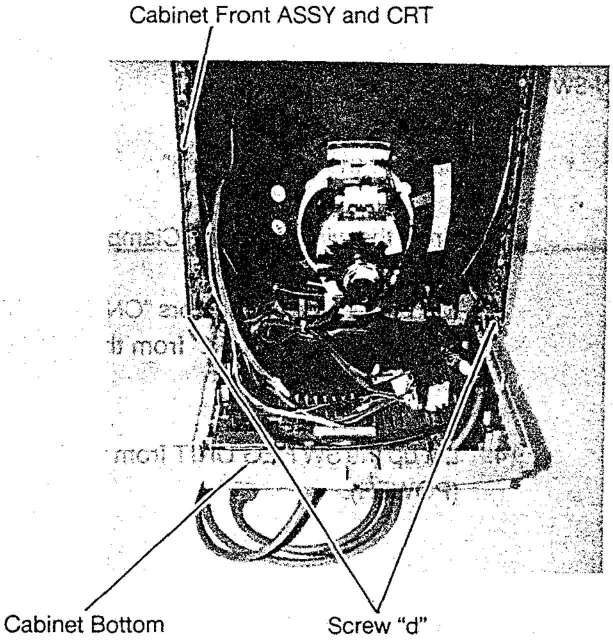
4. Disconnect the connectors "CN-IN", "CN-CV", "CN-Z", "CN-C" and "CN-Y" from the SUB (I/F) PWB ASSY.

5. Untie the wires from the Clamps.

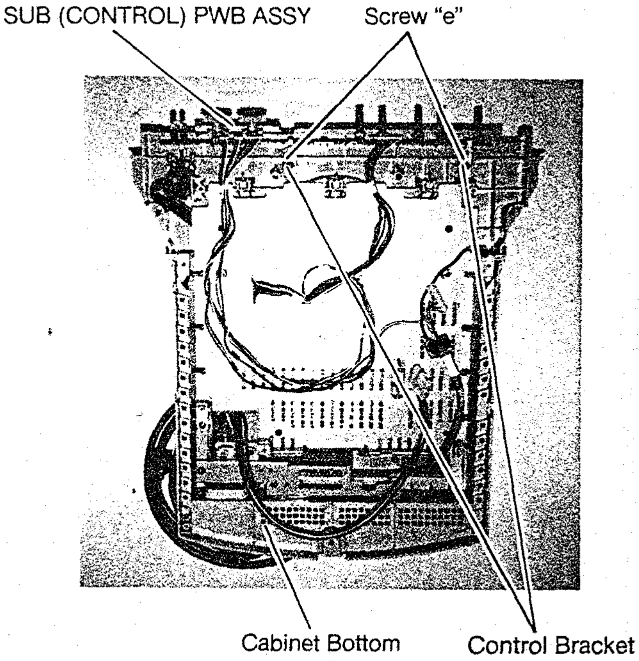
6. Remove the four screws "h".

7. Remove the SUB (I/F) PWB ASSY from the Bracket (L).

SUB (CONTROL) PWB ASSY

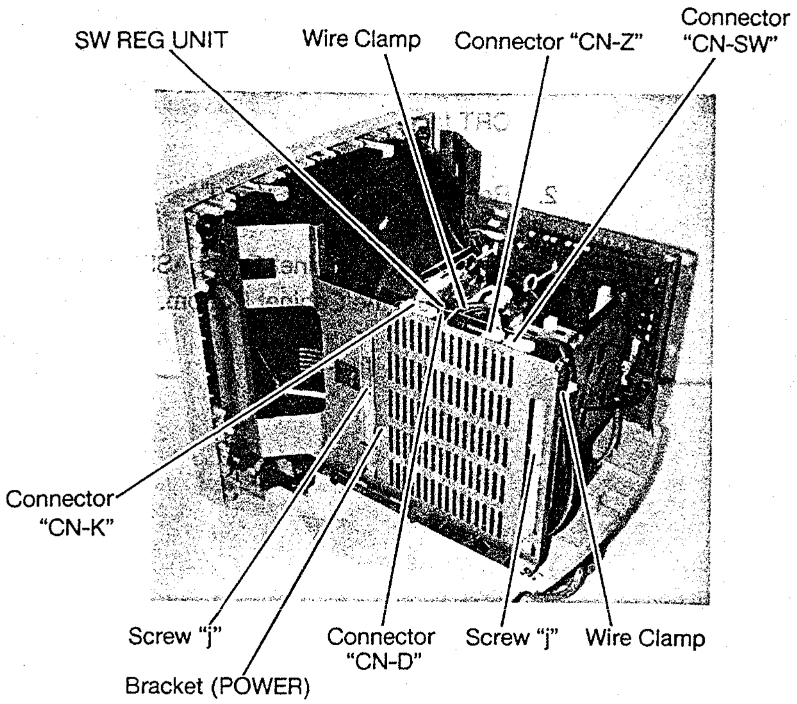

Cabinet Front ASSY and CRT
Cabinet Bottom
Screw "d"

1. Turn the monitor CRT face down on a clean static free surface to prevent scratching CRT face.
2. Remove the two screws "d".
3. Remove the Cabinet Front ASSY and the CRT from the Cabinet Bottom.


SUB (CONTROL) PWB ASSY
Screw "e"
Cabinet Bottom
Control Bracket

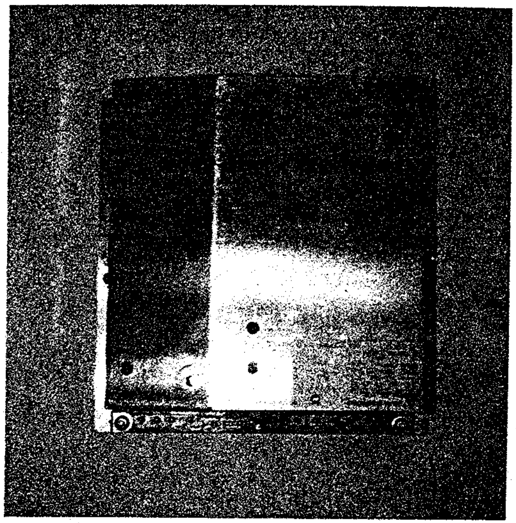
4. Remove the two screws "e".
5. Remove the two Control Brackets.
6. Remove the SUB (CONTROL) PWB ASSY from the Cabinet Bottom.

SW REG UNIT DISASSEMBLY


SW REG UNIT
Wire Clamp
Connector "CN-Z"
Connector "CN-SW"
Connector "CN-K"
Screw "j"
Bracket (POWER)
Connector "CN-D"
Screw "j"
Wire Clamp

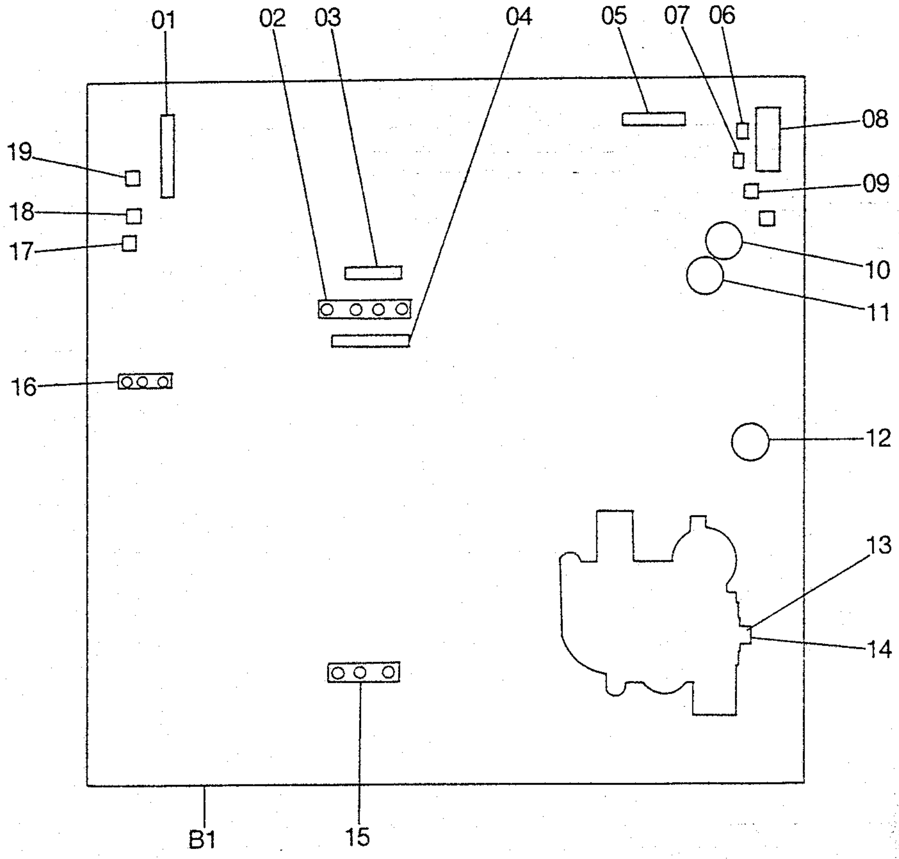
1. Remove the two screws "j".
2. Untie the wires from the Clamps.
3. Disconnect the connectors "CN-SW", "CN-Z", "CN-D" and "CN-K" from the SW REG UNIT.
4. Lift up the SW REG UNIT from the Bracket (POWER).

SW REG UNIT (SMP-120BB-1)



CONNECTOR, CONTROL AND TEST POINT LOCATION DIAGRAM

MAIN PWB ASSY


01
02
03
04
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B1
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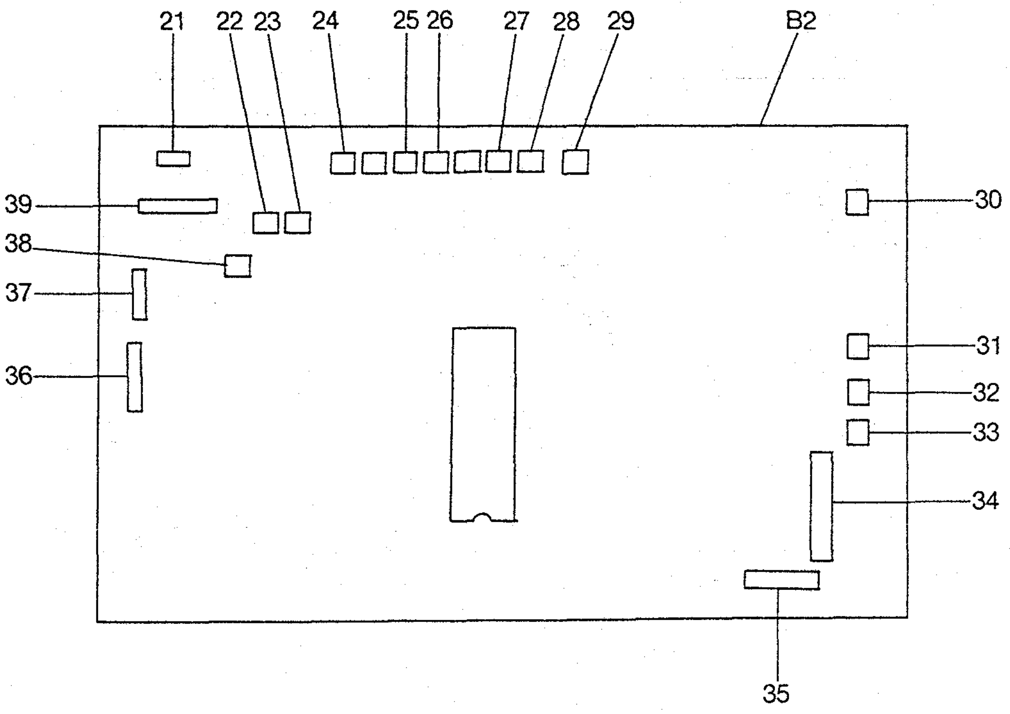
01	CONNECTOR CN-A	11	VR2002 HV PROT 2
02	CONNECTOR CN-K	12	VR516 HV ADJ
03	CONNECTOR CN-Y	13	SCREEN CONTROL
04	CONNECTOR CN-X	14	FOCUS CONTROL
05	CONNECTOR CN-Z	15	CONNECTOR CN-HDY
06	VR510 SUB H SIZE (CENT)	16	CONNECTOR CN—VDY
07	VR511 SUB H SIZE (MAX)	I7	VR420 SUB SIDE PIN
08	TP-M	18	VR411 V LIN (C)
09	VR513 H CENT	19	VR410 SUB V SIZE
10	VR2001 HV PROT 1	B1	MAIN PWB ASSY (PWE-321)

SUB (I/F) PWB ASSY


21
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29
B2
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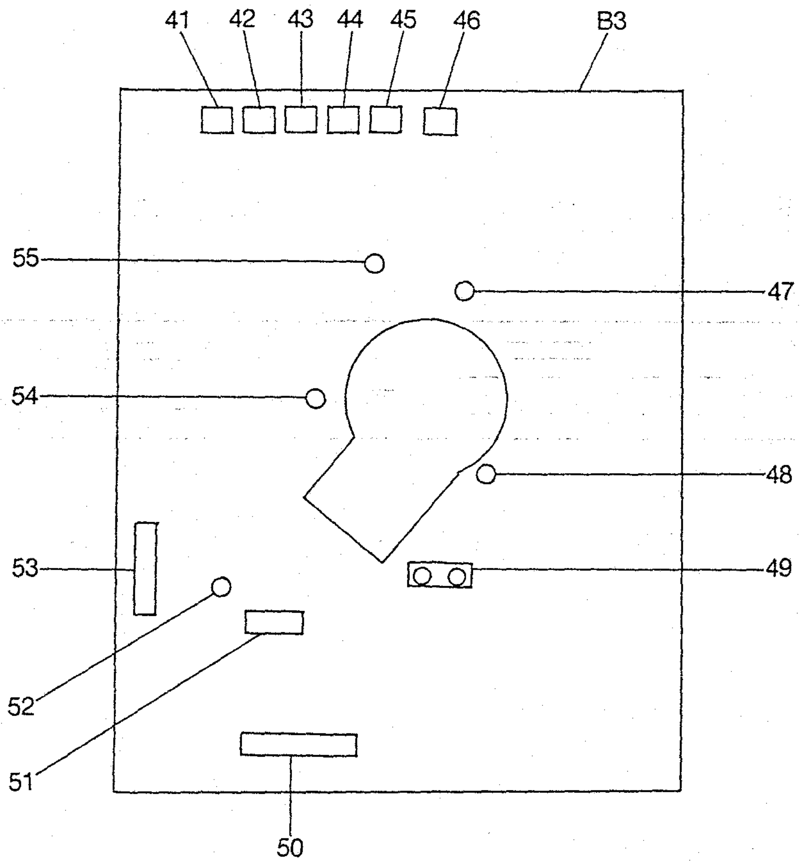
34
35

21	TEST POINT TP-S	31	VR701R R GAIN
22	VR501 H HOLD1	32	VR701G G GAIN
23	VR502 H HOLD2	33	VR701B B GAIN
24	VR536 MAC II	34	CONNECTOR CN-IN
25	VR538 EVGA480	35	CONNECTOR CN-CV
26	VR535 8541/A	36	CONNECTOR CN-Y
27	VR533 8×6 (60)	37	CONNECTOR CN-C
28	VR532 8×6 (56)	38	VR401 V HOLD
29	VR531 H POSITION VGA	39	CONNECTOR CN-Z
30	VR781 SUB CONT	B2	SUB (I/F) PWB ASSY (PWE-322A)

SUB (CRT) PWB ASSY


41
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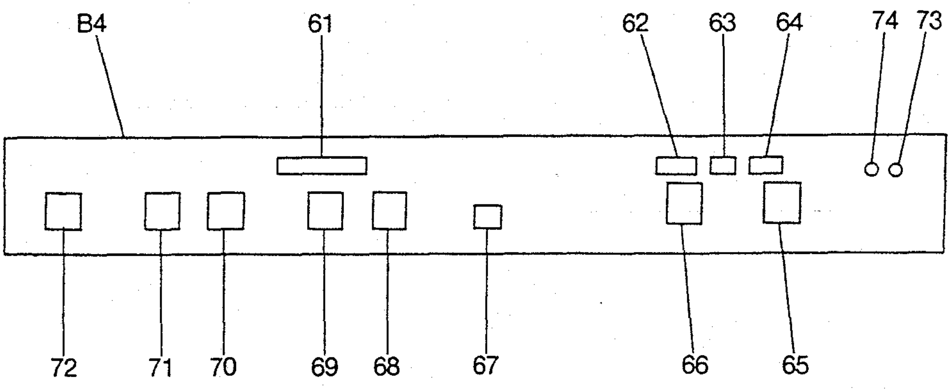
41	VR931B B BIAS	51	CONNECTOR CN-B
42	VR931G G BIAS	52	TEST POINT TP902
43	VR931R R BIAS	53	CONNECTOR CN-CV
44	VR932B BS BRT	54	TEST POINT TP903
45	VR932G GS BRT	55	TEST POINT TP901B
46	VR921 SUB BRT	B3	SUB (CRT) PWB ASSY (PWE-322B)
47	TEST POINT TP901R		
48	TEST POINT TP901G		
49	CONNECTOR CN-CE		
50	CONNECTOR CN-X		

SUB (CONTROL) PWB ASSY


B4
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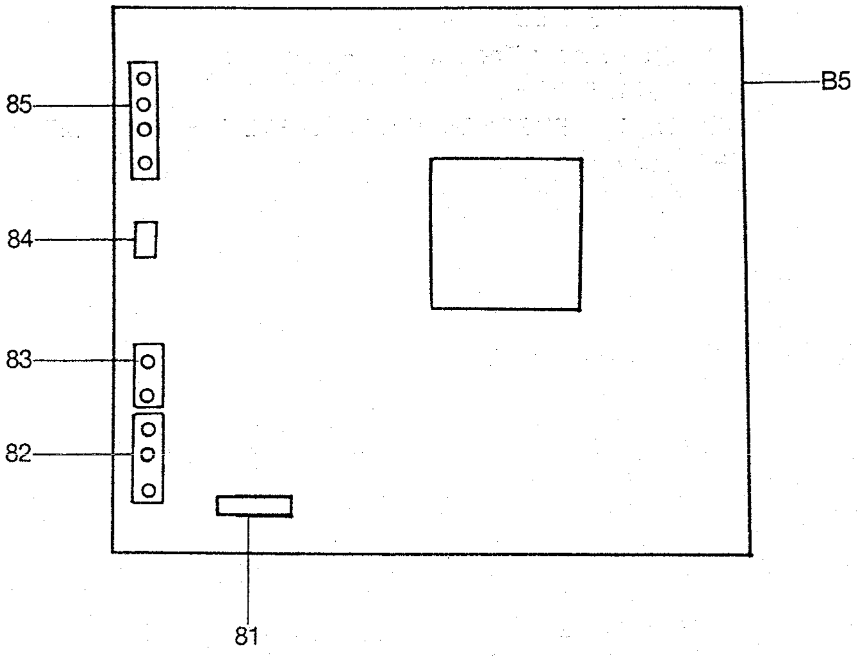
61	CONNECTOR CN-A	71	VR006 V SIZE
62	CONNECTOR CN-C	72	VR007 SIDE PIN
63	CONNECTOR CN-D	73	D001 POWER LED
64	CONNECTOR CN-B	74	D002 POWER LED
65	VR001 BRIGHTNESS	B4	SUB (CONTROL) PWB ASSY (PWE-322C)
66	VR002 CONTRAST		
67	SW001 DEGAUSING		
68	VR003 H POSI		
69	VR004 V POSI		
70	VR005 H SIZE		

SW REG PWB ASSY


85
84
83
82
81
B5

81	FUSE F601
82	CONNECTOR CN-SW
83	CONNECTOR CN-Z
84	CONNECTOR CN-D
85	CONNECTOR CN-K
B5	SW REG UNIT (SMP-120BB-1)

ADJUSTMENT PROCEDURES

Application Range

These specifications outline the adjustment procedures for Model JC-1521HMB/B(EE)/R (N), (H) 15 inch color monitor.

Product Name (Trade Name): MultiSync 3FG
Model Name: JC-1521HMB/B(EE)/R (N), (H)
Destination: The whole Europe/The Southern Hemisphere
Rated Voltage: AC 220-240 50/60 Hz
Safety Standards: TÜV GS, TÜV ERGONOMIE, NEMKO, FTZ, PTB, MPR2, SETI
IEC (Conformity)

Product Outline

These are compatible with the following signal:

Preset Signal: VGA350, VGA400, VGA480, SVGA56, SVGA60, 8514/A, MAC II, EVGA
Horizontal Sync Frequency: 31.5 to 39 kHz
Vertical Sync Frequency: 55 to 90 Hz
Horizontal Sync Signal: TTL Level Positive Polarity, Negative Polarity
Vertical Sync Signal: TTL Level Positive Polarity, Negative Polarity
Composite Sync Signal: TTL Level Negative Polarity
Video Signal: Analog Positive Polarity 0.7 Vp-p/75 ohms
Composite Video Signal: Analog (Video) Positive Polarity 0.7 Vp-p/75 ohms
(Sync) Negative Polarity 0.3 Vp-p/75 ohms

Adjustment Equipment

The recommended equipment for performing JC-1521HMB/B(EE)/R(N),(H) adjustments is listed below. Other equipment should be calibrated against this listing.

Video Signal Generator: Leader Electron, LVG-1603/Quantum data 801C
Brightness Meter: Minolta, Color Analyzer II
Static Type High Voltmeter: Sensitive Research, Model ESH
Direct Current Voltmeter: Internal Resistance 1 Megaohm or More
Oscilloscope: Higher than 20 MHz Band Width
Scale

Adjustment signal

Adjustment procedures are performed using the following signals. The exclusive EG MAC ADAPTER must used when receiving signal 8.

No	Signal Name	Video Signal	Sync Polarity (H/V)	
1	VGA350	Analog, 0.7 V	Separate TTL	P/N
2	VGA400	Analog 0.7 V	Separate TTL	N/P
3	VGA480	Analog 0.7 V	Separate TTL	N/N
4	SVGA56	Analog 0.7 V	Separate TTL	P/P
5	SVGA60	Analog 0.7 V	Separate TTL	P/P
6	8514/A	Analog 0.7 V	Separate TTL	P/P
7	EVGA	Analog 0.7 V	Separate TTL	N/N
8	MACⅡ	Composite 1.0 V	Composite TTL	N/N
9	Sync Signal	Analog 0.7 V	Separate TTL	N/N

Signal Input Pin Arrangements

	VGA		MAC
1.	Red Video	1.	Red Video
2.	Green Video	2.	Green Video (Sync on Green)
3.	Blue Video	3.	Blue Video
4.	GND (8514/A ID)	4.	EARTH
5.	(Self Test) EARTH	5.	(Self Test) EARTH
6.	EARTH R	6.	EARTH R
7.	EARTH G	7.	EARTH G
8.	EARTH B	8.	EARTH B
9.	N/C	9.	N/C
10.	EARTH	10.	EARTH
11.	EARTH (COLOR ID)	11.	EARTH
12.	N/C	12.	N/C
13.	H Sync	13.	Composite Sync
14.	V Sync	14.	EARTH
15.	N/C	15.	N/C

Note: Be sure that pin 5 of the generator signal source is Earthed in order to defeat the Monitor's Self Test feature.

Adjustment Procedures

1. Adjustment Preparation
2. High Voltage Proctector Adjustment
3. Horizontal Hold Adjustment
4. Vertical Hold Adjustment
5. High Voltage Adjustment
6. Vertical Linearity Adjustment
7. Vertical Size Adjustment
8. Horizontal Centering Adjustment
9. Horizontal Phase Adjustment
10. Side Pin cushion Adjustment
11. Horizontal Size Adjustment
12. Video Amplitude Adjustment
13. Cut off Adjustment
14. Sub Brightness Adjustment
15. White Balance Adjustment
16. Focus Adjustment
17. Purity Adjustment
18. Convergence Adjustment
19. How to preset the Color Analyzer II date

Note: Item 2 and 5 are enforced by continuity test of PWB.

1. Adjustment Preparation

(1) Signal Generator (LVG-1603 or 801C) Output Level Adjustment

When the all white of signal 1 (VGA350) is terminated at the 75 ohms, adjust signal generator output level so that each waveform of R, G, B signals are obtained as shown in Fig. 1.

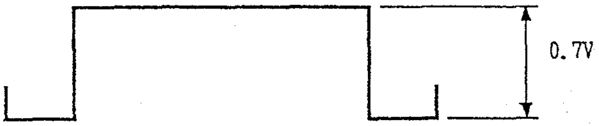


Fig. 1

When the all wite of signal 8 (MAC II) is terminated at the 75 ohms, adjust signal generator output level so that waveform of G signal is obtained as shown in Fig. 2.

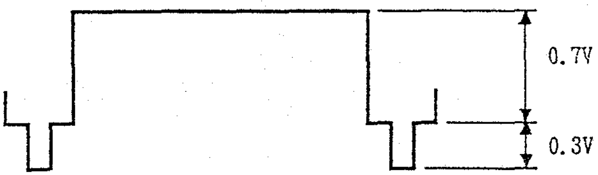


Fig. 2

(2) Adjustment Magnetic Fields

1. Do not apply an external magnetic fields.

Note: Model JC-1521HMR(N),(H) are applied an external vertical magnetic fields as follows.
Vertical magnetic fields: −0.4G

2. The monitor should be facing east.
3. Before adjusting, degauss the entire unit by external degaussing coil.

(3) Initial Settings of Adjustment Controls

Before adjusting, set the position of controls as follows.

a. User control

Power Switch		On
VR001	BRIGHTNESS	Fully clockwise
VR002	CONTRAST	Fully clockwise
VR003	H POSI	Center click position
VR004	V POSI	Mechanical center
VR005	H SIZE	Center click position
VR006	V SIZE	Center click position
VR007	SIDE PIN	Center click position

b. I/F PWB

VR401	V HOLD	Mechanical center
*VR501	H HOLD1	Fully counterclockwise
*VR502	H HOLD2	Mechanical center
VR531	SUB H POSI (VGA)	Mechanical center
VR532	SUB H POSI (SVGA56)	Mechanical center
VR533	SUB H POSI (SVGA60)	Mechanical center
VR535	SUB H POSI (8514/A)	Mechanical center
VR536	SUB H POSI (MACII)	Mechanical center
VR538	SUB H POSI (EVGA)	Mechanical center
VR701R	RU SUB CONT	Mechanical center
VR701G	G SUB CONT	Mechanical center
VR701B	B SUB CONT	Mechanical center
VR781	SUB CONT	Fully clockwise

c. CRT PWB

VR921	SUB BRIGHT	Mechanical center
VR931R	R BIAS	90° counterclockwise (9 o'clock)
VR931G	G BIAS	90° counterclockwise (9 o'clock)
VR931B	B BIAS	90° counterclockwise (9 o'clock)
VR932G	G SUB BRIGHT	Mechanical center
VR932B	B SUB BRIGHT	Mechanical center

d. MAIN PWB

VR410	SUB V SIZE	Mechanical center
VR411	V LIN	Mechanical center
VR420	SUB SIDE PIN	Mechanical center
VR510	SUB H SIZE (CENT)	Fully counterclockwise
*VR511	SUB H SIZE (MAX)	Fully counterclockwise
*VR513	H CENT	Mechanical center
SCREEN CONTROL		Fully counterclockwise
FOCUS CONTROL		Fully counterclockwise

In particular, the controls with "*" must be care initial settings for circuits to prevent from damage by adjustment.

(4) Warm up
Adjust this monitor after a minimum of twenty minutes to allow unit to reach ambient operating temperature.

2. High Voltage Protector Adjustment (Production Line Procedure)

(1) High Voltage Protector 1
With 30.0 V DC applied between TP-M pin 3 and Earth, adjust VR2001 (HV PROT1) to obtain 0.2 V DC between TP-M pin 5 and Earth.
After adjusting, seal VR2001 with a silicon adhesive and cap (VR2001).

(2) High Voltage Protector 2
With 28.7 V DC applied between TP-M pin 6 and Earth, adjust VR2002 (HV PROT2) to obtain 0.2 V DC between TP-M pin 8 and Earth.
After adjusting, seal VR2002 with a silicon adhesive and cap (VR2002).

3. Horizontal Hold Adjustment

(1) Short TP-S pin 1 and 3.
(2) Receive Signal 9 (SYNC ADJUST).
(3) Adjust VR501 (H HOLD1) slightly clockwise so that there is one screen.
(4) Receive Signal 5 (SVGA60).
(5) Adjust VR502 (H HOLD2) so that there is one screen.
(6) Remove the short between TP-S pin 1 and 3.
(7) Receive Signals 3 to 7, check for synchronization.

4. Vertical Hold Adjustment

(1) Turn VR401 (V HOLD) fully clockwise.
(2) Receive Signal 9 (SYNC ADJUST). Adjust VR401 (V HOLD) and set to the mechanical center within the indented range.
(3) Receive Signals 4 to 8, check for synchronization.

5. High Voltage Adjustment (Production Line Procedure)

(1) Turn VR516 (HV ADJ) fully counterclockwise.
(2) Receive Signal 9 (SYNC ADJUST).
(3) Measure high voltage when anode current is shown 0 μA. (This measurement determines Vh)
(4) Adjust VR516 (HV ADJ) so that high voltage is Vh + 500 V.
(5) After adjusting, seal VR516 with a silicon adhesive and cap (VR516).

6. Vertical Linearity Adjustment (Note: Perform this adjustment only if necessary.)

(1) Set VR411 (V LIN (C)) to the mechanical center position.

(2) Receive the cross hatch pattern of signal 4 (SVGA56).

(3) Adjust VR410 (SUB V SIZE) so that screen size is approximately 195 mm.

(4) Adjust VR411 (V LIN (C)) so that up and down linearity is same.
(When the cross hatch pattern is grown upward, turn VR411 (V LIN (C)) slightly counterclockwise, when it is grown downward, turn VR411 (V LIN (C)) slightly clockwise.)

7. Vertical Size Adjustment

(1) Receive the cross hatch pattern of signal 3 (VGA480).

(2) Set VR006 (V SIZE) to the center click position.

(3) Adjust VR410 (SUB V SIZE) so that screen size is approximately 195 mm.

8. Horizontal Centering Adjustment

(1) Receive the all black of signal 3 (VGA480).

(2) Turn VR510 (SUB H SIZE (CENT)), VR511 (SUB H SIZE (MAX)) fully counterclockwise.

(3) Turn VR005 (H SIZE) fully clockwise.

(4) Adjust the SCREEN CONTROL so that back-raster is bright.
However, make sure that back-raster is bright enough for screen to be setup. (Setup is moved to VR003 (H POSI).)

(5) Adjust VR513 (H CENT) so that length is equal A and B as shown in Fig. 3.
(For easier adjusting, adjust VR511 (SUB H SIZE (MAX) so that back-raster is the largest in range of bezel or less.).

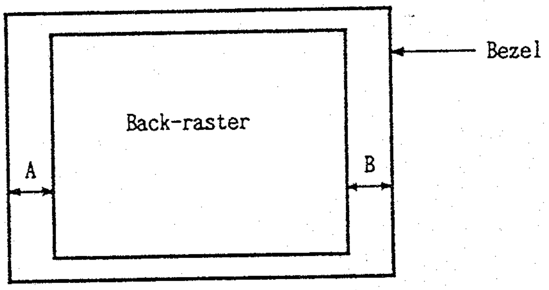


Fig. 3

9. Horizontal Phase Adjustment

(1) Set VR003 (H POSI) to the center click position.

(2) Receive the inverted cross hatch pattern of signal 3 (VGA480).
Adjust VR531 (SUB H POSI (VGA)) to center screen within bezel.

(3) Receive the inverted cross hatch pattern of signal 4 (SVGA56).
Adjust VR532 (SUB H POSI (SVGA56)) to center screen within bezel.

(4) Receive the inverted cross hatch pattern of signal 5 (SVGA60).
Adjust VR533 (SUB H POSI (SVGA60)) to center screen within bezel.

(5) Receive the inverted cross hatch pattern of signal 6 (8514/A).
Adjust VR535 (SUB H POSI (8514/A)) to center screen within bezel.

(6) Receive the inverted cross hatch pattern of signal 7 (EVGA480).
Adjust VR538 (SUB H POSI (EVGA)) to center screen within bezel.

(7) Receive the inverted cross hatch pattern of signal 8 (MACII).
Adjust VR536 (SUB H POSI (MACII)) to center screen within bezel.

10. Side Pincushion Adjustment

(1) Receive the inverted cross hatch pattern of signal 4 (SVGA56).

(2) Set VR006 (V SIZE), VR007 (SIDE PIN) to the center click position.

(3) Adjust VR004 (V POSI) so that vertical screen position is center of bezel.

(4) Adjust VR005 (H SIZE) so that horizontal screen size is approximately 260 mm.

(5) Adjust VR420 (SUB SIDE PIN) so that both sides of screen are straight.

11. Horizontal Size Adjustment

(1) Receive the inverted cross hatch pattern of signal 3 (VGA480).

(2) Set VR003 (H POSI), VR007 (SIDE PIN) to the center click position.

(3) Turn VR005 (H SIZE (MAX)) fully clockwise.

(4) Adjust VR511 (SUB H SIZE (MAX)) so that screen area is over scan about 2 to 3 mm.
(When using LVG-1603, the inverted cross hatch pattern of outside vertical line is to hide the bezel.)

(5) Set VR005 (H SIZE) to the center click position.

(6) Adjust VR510 (SUB H SIZE (CENT)) so that horizontal screen size is 260 mm.

12. Video Amplitude Adjustment

NOTE: Check that the video signals are as shown below before performing the this adjustment.

Video:	Analog 0.7 Vp-p (75 ohms terminated)
Sync:	Separate TTL Level

Initial settings of adjustment controls.

VR001	BRIGHTNESS	: Fully counterclockwise
VR002	CONTRAST	: Fully clockwise
VR701R, G, B	R, G, B GAIN	: Mechanical center position
VR781	SUB CONTRAST	: Fully clockwise
VR931R, G, B	R, G, B BIAS	: 90° counterclockwise
VR932G, B	G, B SUB BRIGHT	: Mechanical center position
VR921	SUB BRIGHT	: Mechanical center position
SCREEN CONTROL		: Fully counterclockwise

(1) GAIN Adjustment

- a. Receive the all white 1/4 window pattern of signal 1 (VGA350).
- b. Set VR001 (BRIGHTNESS) fully counterclockwise, VR002 (CONTRAST) fully clockwise.
- c. Adjust VR701R, G, B so that the TP901R, G, B on the CRT PWB are set to 47 Vp-p.
- d. After adjusting, check that each waveform of TP-901R, G, B was set to 47 Vp-p as shown in Fig. 4.

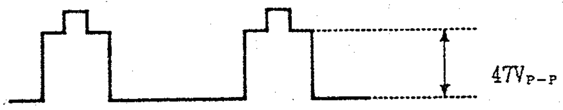


Fig. 4

(2) SUB CONTRAST Adjustment

- a. Receive the all white 1/4 window pattern of signal 1 (VGA350).
- b. Set VR001 (BRIGHTNESS), VR002 (CONTRAST) fully counterclockwise.
- c. Adjust VR781 (SUB CONTRAST) so that TP901R on the CRT PWB is set to 10 Vp-p.
- d. After adjusting, check that each waveform of TP901R, G, B were set to 10 Vp-p ±0.5Vp-p.

13. Cut Off Adjustment

(1) Receive the all black pattern of signal 1 (VGA350).

(2) Set VR001 (BRIGHTNESS), VR002 (CONTRAST), SCREEN CONTROL fully counterclockwise.

(3) Short Tesp Points TP902 and TP903 on the CRT PWB.

(4) Short TP-S pin 1 and 2 on the I/F PWB.

(5) Turn the SCREEN CONTROL clockwise slowly until a single color appears horizontally. Adjust the SCREEN CONTROL so that the color can faintly be seen. This color is the reference color for the cut off adjustment.

(6) Adjust VR931 (BIAS) clockwise except the above reference color so that horizontal screen is white. Turn the Bias VR's for the other colors than the reference color until they are as Bright as the reference color.

(7) Remove the short between TP-S pin 1 and 2 on the I/F PWB.

(8) Remove the short between TP902 and TP903 on the CRT PWB.

*** Check the TV-Color AnalyzerⅡ has been preset with the calibration data before the starting next adjustment.

(*1) Set MODE selector of the TV-Color AnalyzerⅡ to "CHROMA" position.

(*2) Select #1 CRT memory channel by pressing CRT key until LED lights beneath appropriate channel number.

(*3) Select desired COLOR memory channels by pressing CRT key until LED lights beneath appropriate channel numbers.

(*4) Check the preset data by pressing MR (memory read) key. This data will be shown on the LED displays.

COLOR#	Data "x"	Data "y"	Data "Y"
1 (Memory-1)	0.300±0.002	0.305±0.002	6 cd/m^2
2 (Memory-2)	0.300±0.002	0.305±0.002	20 cd/m^2

(*5) If this data is not displayed, it has not been preset with the calibration data. The ANALYZER must be preset with the calibration data according to the document of the "How to preset the Color AnalyzerⅡ data".

*** Degauss the monitor using an external degaussing coil before continuing with the white balance adjustment.

14. Sub Brightness Adjustment

(1) Use memory-1 (ANALYZER MODE) of Color Analyzer II.
Memory-1 : Chromaticity coodinates x=0.300
y=0.305
Brightness 6 cd/m^2

(2) Set VR001 (BRIGHTNESS) fully clockwise, VR002 (CONTRAST) fully counterclockwise.

(3) Receive the all black pattern of signal 1 (VGA350).

(4) Adjust VR921 (SUB BRIGHT) to obtain 100 on the Red screen.
(When not able to obtain 100, go back and repeat the Cut Off Adjustment step 13 page 30.)

(5) Adjust VR932G, B (G, B SUB BRIGHT) to obtain 100 on the Green and Blue screens.

15. White Balance Adjustment

(1) Use memory-2 (ANALYZER MODE) of Color Analyzer II.
Memory-2 : Chromaticity coodinates x=0.300
y=0.305
Brightness 20 cd/m^2

(2) Set VR001 (BRIGHTNESS), VR002 (CONTRAST) fully counterclockwise.

(3) Receive the all white 1/4 window pattern of signal 1 (VGA350).

(4) Adjust VR002 (CONTRAST) to obtain 100 on the Red or Green screen which either one is the lower.

(5) Adjust VR701 (GAIN) to obtain 100 on the other screen.

16. Focus Adjustment

(1) Set VR001 (BRIGHTNESS) so that the back-raster just disappears and set VR002 (CONTRAST) fully clockwise.

(2) Receive the all "$" (4 dots missing) character pattern of signal 5 (SVGA60).

(3) Adjust the FOCUS CONTROL to obtain the best focus the whole screen.
The point of standard adjustment are as shown in Fig. 5.

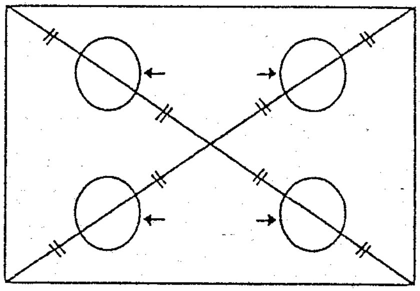


Fig. 5

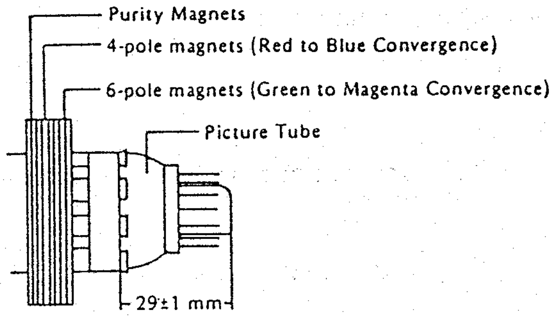
17. Purity Adjustment

(1) Be sure that the display is not being exposed to any external magnetic fields.

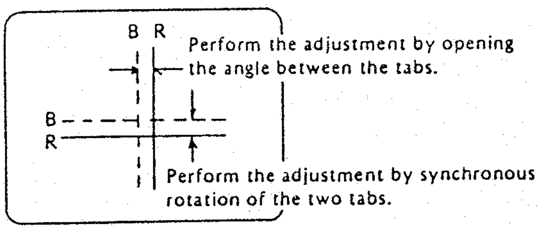
(2) Ensure that the spacing between the Purity Convergence Magnet (PCM) assembly and the CRT stem is 29 mm±1 mm. (See below diagrams)

(3) Produce a complete, red pattern on the screen. Adjust the purity magnet rings on the PCM assembly to obtain a complete field of the color red. This is done by moving the two tabs in such a manner that they advance in an opposite direction but at the same time to obtain the same angle between the two tabs, which should be approximately 180°.

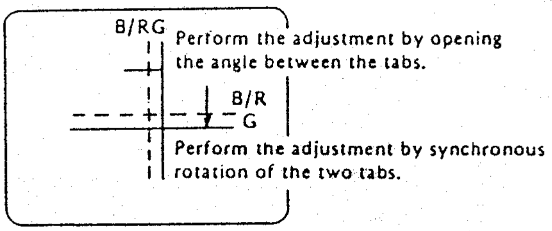
(4) Check the complete blue and complete green patterns to observe their respective color purity. Make minor adjustments if needed.


Purity Magnets
4-pole magnets (Red to Blue Convergence)
6-pole magnets (Green to Magenta Convergence)
Picture Tube
29±1 mm

Purity, Convergence Magnet Assembly (PCM)


B R
Perform the adjustment by opening the angle between the tabs.
B
R
Perform the adjustment by synchronous rotation of the two tabs.

Red to Blue Convergence
(Magenta)


B/RG
Perform the adjustment by opening the angle between the tabs.
B/R
G
Perform the adjustment by synchronous rotation of the two tabs.

Green to Magenta Convergence
(White)

18. Convergence Adjustment

(1) Produce a magenta crosshatch on the screen.

(2) Adjust the focus for the best overall focus on the screen.
Also adjust the brightness to the desired condition.

(3) Vertical red and blue lines are converged by varying the angle between the two tabs of the 4-pole magnets on the PCM assembly. (See diagrams above)

(4) Horizontal red and blue lines are converged by varying the two tabs together, keeping the angle between them constant.

(5) Produce a white crosshach pattern on the screen.

(6) Vertical green and magenta lines are converged by varying the angle between the two tabs of the 6-pole magnets.

(7) Horizontal green and magenta lines are converged by varying the two tabs together, keeping the angle between them constant.

19. How to preset the Color Analyzer II data

The MultiSync 3FG must use the TV-COLOR ANALYZER II for performing the white balance adjustment. The color Analyzer II must be preset with the standard values before performing this adjustment procedure.
This document will specify and explain how to program standard values into memory.
This section will specify and explain how to preset the standard values into the ANALYZER's memory.
(General)
The MultiSync 3FG unique specified white balance is set to: "x=0.300, y=0.305".
(Memory preset procedure)

Equipment: Minolta TV-Color Analyzer II TV-2130/2140/2150/2160
MultiSync 3FG

(1) Setup
Use the VGA480 signal for data storage. The monitor should be connected to the signal generator for a minimum of twenty minutes.

(2) Zero Calibration
- a) Connect probe to main unit's probe terminal, turn power switch on.
- b) An automatic check is conducted as soon as power is turned on. If check is satisfactory, top digital display reads "CAP".
- c) Place calibration cap over probe or set probe in calibration chamber located on top of unit.
- d) Press CAL key. "CAL" appears in top of display during operation, and all displays blink when calibration is complete.

(3) Presetting the phosphor characteristics
- a) Set mode selector to ANALYZER position.
- b) Display "Pure Red" 1/4 window pattern on CRT screen.

BRIGHTNESS CONTROL:	Fully counterclockwise
CONTRAST CONTROL:	Fully clockwise

- c) Press probe firmly against monitor screen center.
- d) Select CRT channel number by pressing CRT key until LED lights indicate channel #1.
- e) To measure red phosphor characteristics, press the CAL key until LED lights beneath channel R.
- f) After readings on LED display have stabilized, store values by pressing CAL key while holding down MS key. A LED beneath channel R blinks to confirm that red phosphor characteristics have been properly stored.
- g) Repeat procedures b) through f), two more times, using CAL key select channels G and B, and consecutively input green and blue phosphor characteristics into memory. When all primaries are input to memory, LEDs beneath R, G and B blink briefly to indicate that the phosphor characteristics are properly stored in a #1 CRT channel.

NOTE: All three phosphor characteristics must be stored in memory for accurate measurement in analyze mode.

(4) Presetting data into memory 1

a) Set mode selector to CHROMA mode.

b) Set the color channel to "1" by pressing COLOR key.

c) Set the CRT channel to "1" by pressing CRT key.

d) Display "All White" pattern on CRT screen.

BRIGHTNESS CONTROL:	Arbitrary position
CONTRAST CONTROL:	Arbitrary position

e) Press probe firmly against monitor screen. Use tape to attach the probe to the screen to make this procedure easier to perform.

f) Generate the following white pattern on monitor's screen by adjusting a combination of the R, G and B ratio on the signal generator; or the R, G and B gain controls and/or the BRIGHTNESS and CONTRAST CONTROLS.

(Memory-1 white) x=0.300 y=0.305 Y=6 cd/m^2

g) Once desired values are shown on digital display, press COLOR key while holding down MS key to store this data. The LED beneath "1" blinks and two center LEDs (green) on each deviation array light to confirm that data has been properly stored.

(5) Presetting the white balance data that named "Memory-2".

a) Set mode selector to CHROMA mode.

b) Set the color channel to "2" by pressing COLOR key.

c) Set the CRT channel to "1" by pressing CRT key.

d) Display "All White" pattern on CRT screen.

BRIGHTNESS CONTROL:	Arbitrary position
CONTRAST CONTROL:	Arbitrary position

e) Press probe firmly against monitor screen. Use tape to attach the probe to the screen to make this procedure easier to perform.

f) Generate the following white pattern on monitor's screen by adjusting a combination of the R, G and B ratio on the signal generator; or the R, G and B gain controls and/or the BRIGHTNESS and CONTRAST CONTROLS.

(Memory-2 white) x=0.300 y=0.305 Y=20 cd/m^2

g) Once desired values are shown on digital display, press COLOR key while holding down MS key to store this data. The LED beneath "2" blinks and two center LEDs (green) on each deviation array light to confirm that data has been properly stored.

(6) Set the write protect

After presetting all data, set the W-LOCK switch to ON located under the plastic strip on the bottom of the color Analyzer. The preset data will be stored for 1,500 hours provided the Analyzer is used for at least 7 hours per week.

If the data is lost, it will be necessary to reprogram the Analyzer with the Above procedure.

Timing of Reference Signals
Signal for Using LVG-1603

	Abbreviation	UNIT	1	2	3	4	5	6	7	8	9
			VGA 350	VGA 400	VGA 480	SVGA56	SVGA60	8514/A	EVGA 480	MACII	SYNC ADJUST
HORIZONTAL	Total	DOT	0800	0900	0800	1024	1056	1264	0832	0864	0800
	Rate	kHz	031470	031470	031470	03516	037879	035520	037861	035000	030000
	Dots/Character	DOT	08	09	08	08	08	08	08	08	08
	Character	CHR	F080	F080	F080	F100	F100	F128	F080	F080	F100
	Drive Delay	DOT	0656	0738	0656	0824	0840	1032	0664	0704	0540
	Drive Width	DOT	0096	0108	0096	0072	0128	0176	0040	064	0080
VERTICAL	Total	RASTER	0449	0449	0524	0625	628	0409	0520	0525	0588
	Rate	Hz	070000	070000	060000	056200	060317	087000	072809	066700	051020
	Lines/Character	RASTER	14	16	16	15	12	12	12	16	16
	Rows	RASTER	0350	0400	0480	0600	0600	0384	0480	0480	0320
	Drive Delay	RASTER	0387	0412	0489	0601	0601	384	0489	0483	0452
	Drive Width	RASTER	0002	0002	0002	0002	0004	0004	0002	0003	0004
DOT RATE		MHz	028323	028323	028323	036004	04000	044897	031500	030240	024000
Scan Mode			F0	F0	F0	F0	F0	F1	F0	F0	F0
Character Font			F1	F1	F1	F1	F1	F1	F1	F1	F1
Character Code			—	—	—	—	—	—	—	—	—
Pattern Key Code			F	F	F	F	F	F	F	F	F
Video Output			1110	1110	1110	1110	1110	1110	1110	1110	1110
Add Sync/Inverse			0001	0001	0001	0001	0001	0001	0001	0101	0001
Dot Duty			00	00	00	00	00	00	00	00	00
Polarity			10	01	00	11	11	11	00	00	00

Timing of Reference Signals
Signal for Quantum 801C

Signal No	1	2	3	4	5	6	7	8	9
	VGA350	VGA400	VGA480	SVGA56	SVGA60	8514/A	EVGA480	MACII	SYNC Adj
Dot Rate (MHz)	28.320	28.320	28.320	31.960	32.040	31.968	31.496	30.240	24.000
Horizontal Rate (kHz)	31.470	31.467	31.467	35.160	37.872	35.520	37.856	35.000	30.000
Vertical Rate (Hz)	70.08	70.08	60.06	56.26	60.31	86.96	72.80	66.67	51.02
H Dots/Char	9	9	9	9	9	9	8	8	8
H Total	100	100	100	101	94	100	104	108	100
H Chracters	80	80	80	79	71	81	80	80	45
H Drive Delay	82	82	82	81	75	82	83	88	67
H Drive Width	12	12	12	7	11	14	5	8	10
V Lines/Char	10	10	10	10	12	12	12	10	16
V Total	449	449	524	625	628	817	520	525	588
V Rows	35	40	48	60	50	64	40	48	20
V Drive Delay	39	41	49	60	50	64	41	48	28
V Drive Width	2	2	2	2	4	4	3	3	4
V Step Width	2	2	2	2	2	2	2	2	2
OP 1 (comp Sync)	0	0	0	0	0	0	0	0	0
OP 2 (V Step)	0	0	0	0	0	0	0	0	0
OP 3 (H Drive)	1	1	1	1	1	1	1	1	1
OP 4 (V Drive)	1	1	1	1	1	1	1	1	1
OP 5 (Comp Sync P)									
OP 6 (V Step P)	0	0	0	0	0	0	0	0	0
OP 7 (H Drive P)	0	1	1	0	0	0	1	1	1
OP 8 (V Drive P)	1	0	1	0	0	0	1	1	1
OP 9 (Interrace)	0	0	0	0	0	3	0	0	0
OP 10 (Video Mode)	1	1	1	1	1	1	1	1	1
OP 11 (Duty Cycle)	0	0	0	0	0	0	0	0	0
OP 12 (Clock Phase)	0	0	0	0	0	0	0	0	0
OP 13 (Video P)	0	0	0	0	0	0	0	0	0
OP 14 (H Skew)									
OP 15 (V Skew)									
OP 16 (Cursor)									

TROUBLE SHOOTING

Before using this chart, refer to the trouble shooting section in the user's manual.

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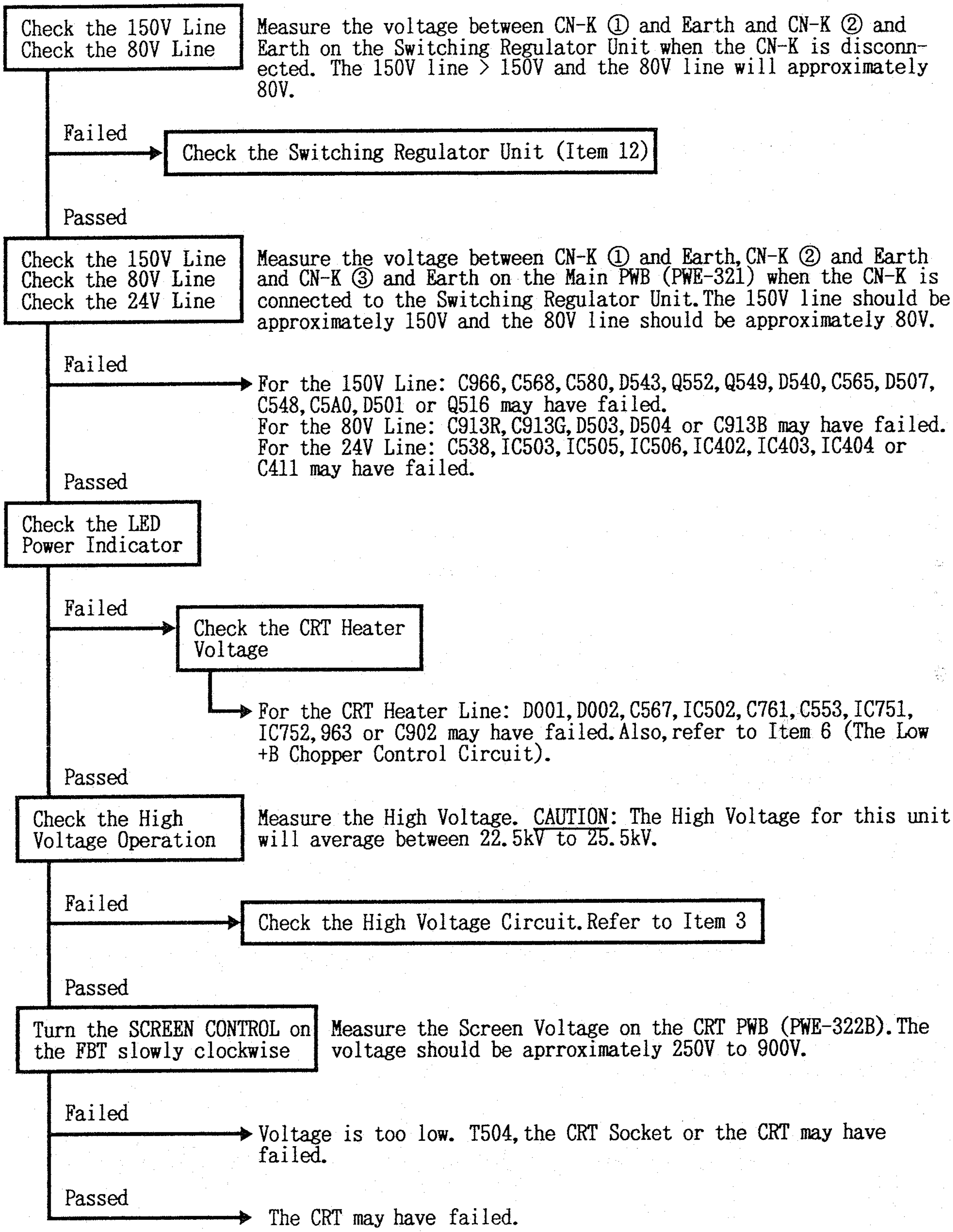
1. NO RASTER



Check the 150V Line
Check the 80V Line

Measure the voltage between CN-K ① and Earth and CN-K ② and Earth on the Switching Regulator Unit when the CN-K is disconnected. The 150V line > 150V and the 80V line will approximately 80V.

Failed → Check the Switching Regulator Unit (Item 12)

Passed

Check the 150V Line
Check the 80V Line
Check the 24V Line

Measure the voltage between CN-K ① and Earth, CN-K ② and Earth and CN-K ③ and Earth on the Main PWB (PWE-321) when the CN-K is connected to the Switching Regulator Unit. The 150V line should be approximately 150V and the 80V line should be approximately 80V.

Failed → For the 150V Line: C966, C568, C580, D543, Q552, Q549, D540, C565, D507, C548, C5A0, D501 or Q516 may have failed.
For the 80V Line: C913R, C913G, D503, D504 or C913B may have failed.
For the 24V Line: C538, IC503, IC505, IC506, IC402, IC403, IC404 or C411 may have failed.

Passed

Check the LED
Power Indicator

Failed → Check the CRT Heater Voltage → For the CRT Heater Line: D001, D002, C567, IC502, C761, C553, IC751, IC752, 963 or C902 may have failed. Also, refer to Item 6 (The Low +B Chopper Control Circuit).

Passed

Check the High
Voltage Operation

Measure the High Voltage. CAUTION: The High Voltage for this unit will average between 22.5kV to 25.5kV.

Failed → Check the High Voltage Circuit. Refer to Item 3

Passed

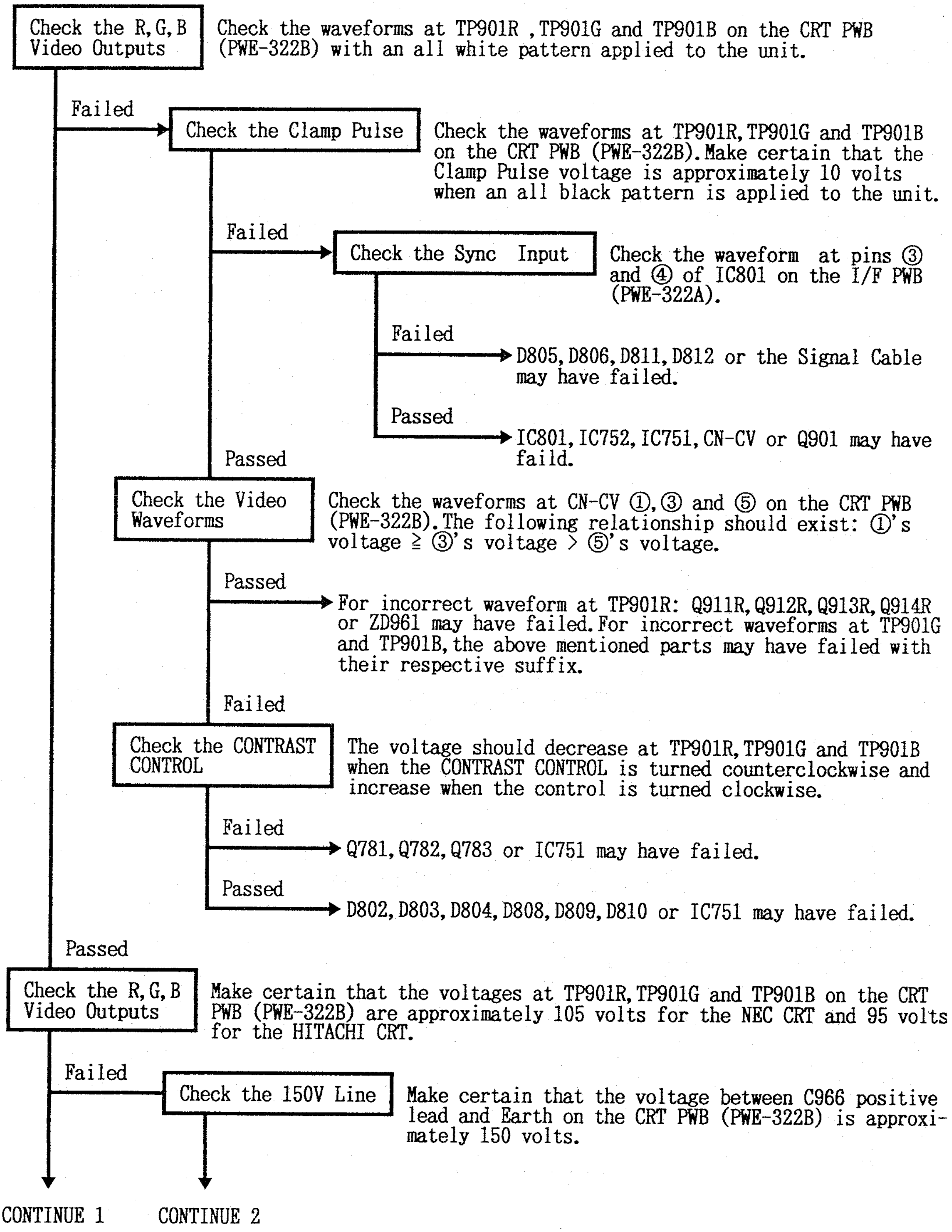
Turn the SCREEN CONTROL on
the FBT slowly clockwise

Measure the Screen Voltage on the CRT PWB (PWE-322B). The voltage should be aprroximately 250V to 900V.

Failed → Voltage is too low. T504, the CRT Socket or the CRT may have failed.

Passed → The CRT may have failed.

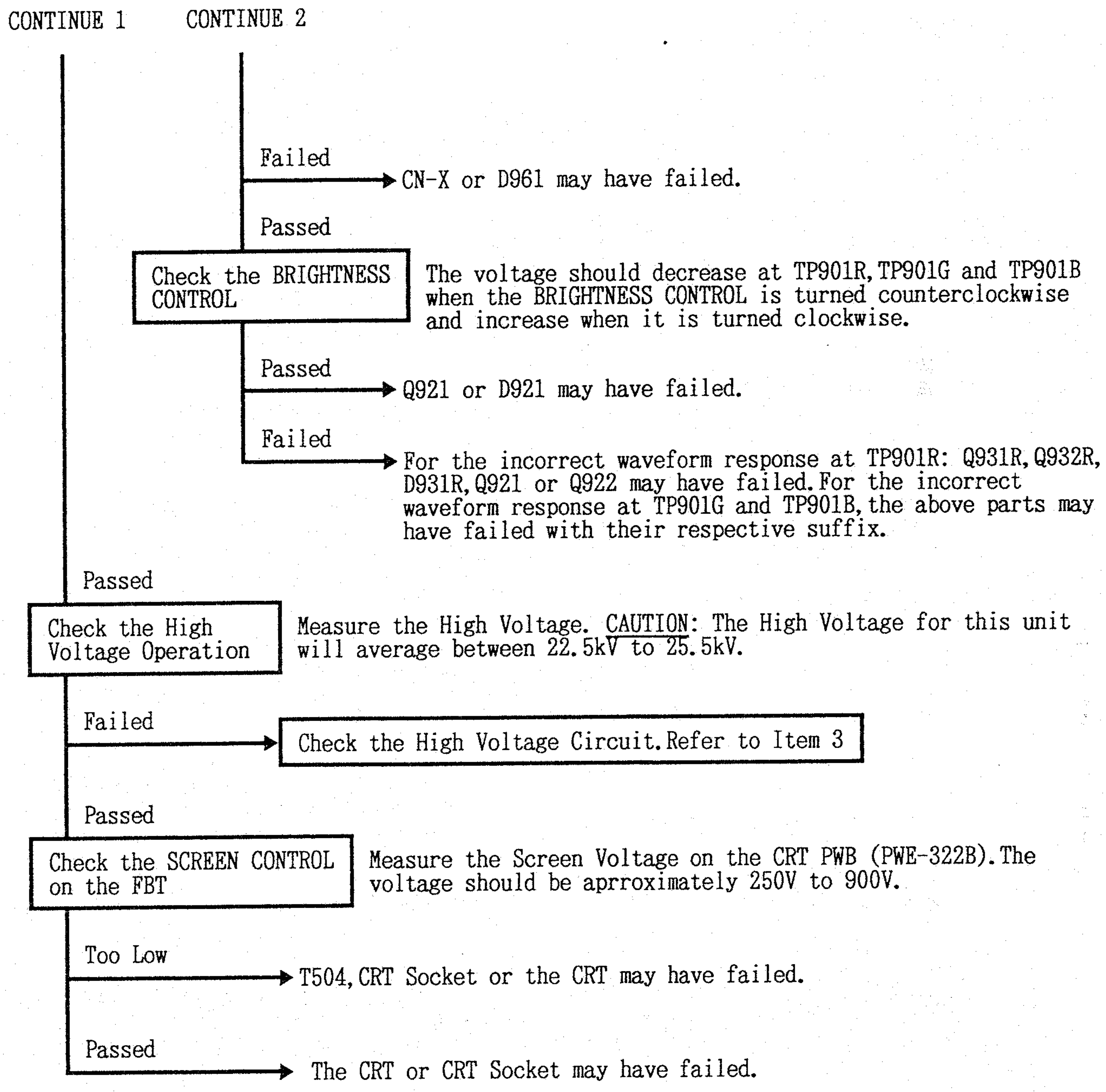
2. ABNORMAL IMAGE OR RASTER BRIGHTNESS (Too Dark or Too Bright)



Check the R,G,B Video Outputs
Check the waveforms at TP901R ,TP901G and TP901B on the CRT PWB (PWE-322B) with an all white pattern applied to the unit.

- Failed → **Check the Clamp Pulse**
  Check the waveforms at TP901R,TP901G and TP901B on the CRT PWB (PWE-322B).Make certain that the Clamp Pulse voltage is approximately 10 volts when an all black pattern is applied to the unit.
  - Failed → **Check the Sync Input**
    Check the waveform at pins ③ and ④ of IC801 on the I/F PWB (PWE-322A).
    - Failed → D805,D806,D811,D812 or the Signal Cable may have failed.
    - Passed → IC801,IC752,IC751,CN-CV or Q901 may have faild.
  - Passed → **Check the Video Waveforms**
    Check the waveforms at CN-CV ①,③ and ⑤ on the CRT PWB (PWE-322B).The following relationship should exist: ①'s voltage ≧ ③'s voltage > ⑤'s voltage.
    - Passed → For incorrect waveform at TP901R: Q911R,Q912R,Q913R,Q914R or ZD961 may have failed.For incorrect waveforms at TP901G and TP901B,the above mentioned parts may have failed with their respective suffix.
    - Failed → **Check the CONTRAST CONTROL**
      The voltage should decrease at TP901R,TP901G and TP901B when the CONTRAST CONTROL is turned counterclockwise and increase when the control is turned clockwise.
      - Failed → Q781,Q782,Q783 or IC751 may have failed.
      - Passed → D802,D803,D804,D808,D809,D810 or IC751 may have failed.
- Passed → **Check the R,G,B Video Outputs**
  Make certain that the voltages at TP901R,TP901G and TP901B on the CRT PWB (PWE-322B) are approximately 105 volts for the NEC CRT and 95 volts for the HITACHI CRT.
  - Failed → **Check the 150V Line**
    Make certain that the voltage between C966 positive lead and Earth on the CRT PWB (PWE-322B) is approximately 150 volts.

CONTINUE 1 CONTINUE 2



CONTINUE 1

CONTINUE 2

Failed → CN-X or D961 may have failed.

Passed

Check the BRIGHTNESS CONTROL

The voltage should decrease at TP901R, TP901G and TP901B when the BRIGHTNESS CONTROL is turned counterclockwise and increase when it is turned clockwise.

Passed → Q921 or D921 may have failed.

Failed → For the incorrect waveform response at TP901R: Q931R, Q932R, D931R, Q921 or Q922 may have failed. For the incorrect waveform response at TP901G and TP901B, the above parts may have failed with their respective suffix.

Passed

Check the High Voltage Operation

Measure the High Voltage. CAUTION: The High Voltage for this unit will average between 22.5kV to 25.5kV.

Failed → Check the High Voltage Circuit. Refer to Item 3

Passed

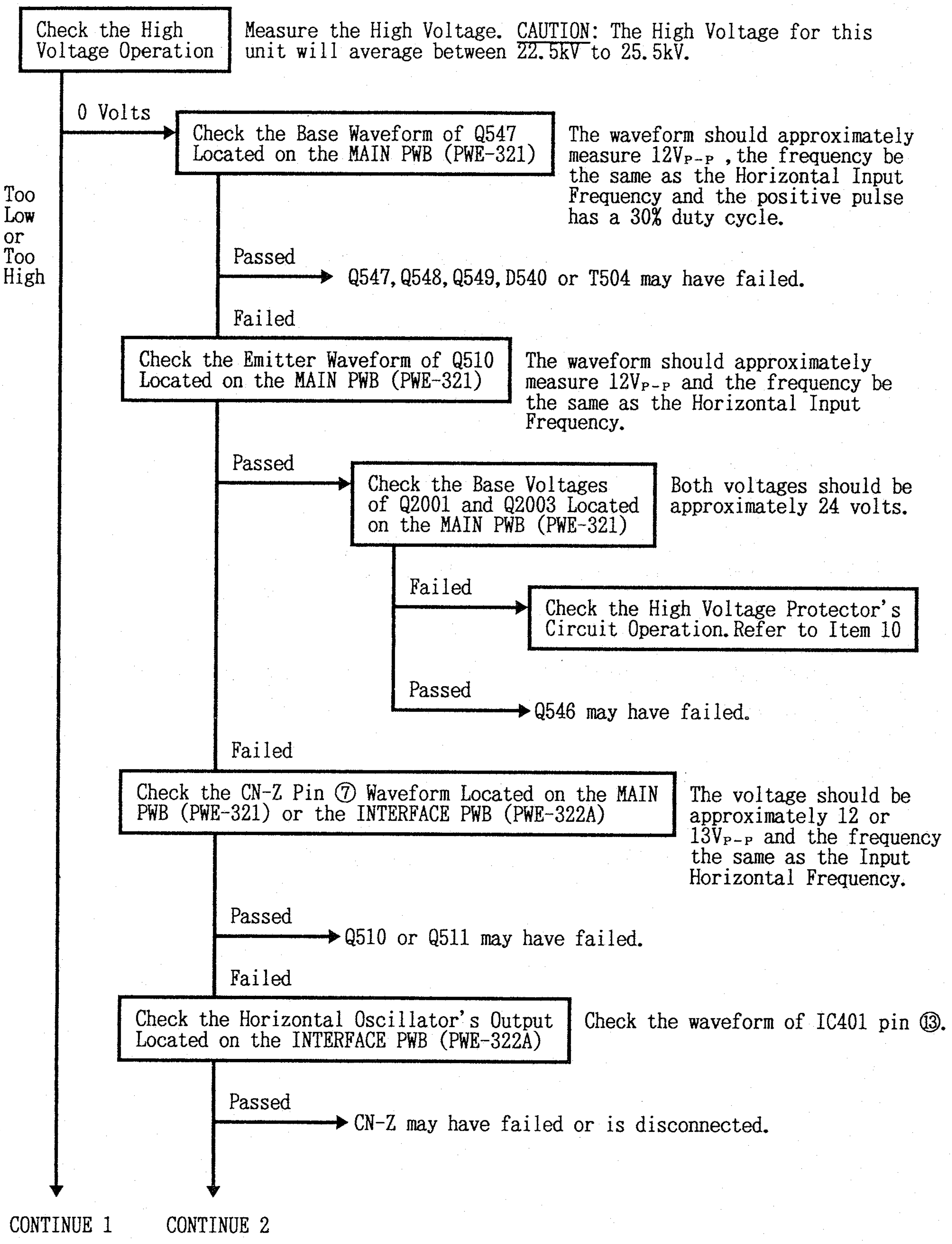
Check the SCREEN CONTROL on the FBT

Measure the Screen Voltage on the CRT PWB (PWE-322B). The voltage should be aprroximately 250V to 900V.

Too Low → T504, CRT Socket or the CRT may have failed.

Passed → The CRT or CRT Socket may have failed.

3. HIGH VOLTAGE FAILURE



Check the High Voltage Operation

Measure the High Voltage. CAUTION: The High Voltage for this unit will average between 22.5kV to 25.5kV.

0 Volts: Check the Base Waveform of Q547 Located on the MAIN PWB (PWE-321)

The waveform should approximately measure $12V_{P-P}$, the frequency be the same as the Horizontal Input Frequency and the positive pulse has a 30% duty cycle.

Passed: Q547, Q548, Q549, D540 or T504 may have failed.

Failed: Check the Emitter Waveform of Q510 Located on the MAIN PWB (PWE-321)

The waveform should approximately measure $12V_{P-P}$ and the frequency be the same as the Horizontal Input Frequency.

Passed: Check the Base Voltages of Q2001 and Q2003 Located on the MAIN PWB (PWE-321)

Both voltages should be approximately 24 volts.

Failed: Check the High Voltage Protector's Circuit Operation. Refer to Item 10

Passed: Q546 may have failed.

Failed: Check the CN-Z Pin ⑦ Waveform Located on the MAIN PWB (PWE-321) or the INTERFACE PWB (PWE-322A)

The voltage should be approximately 12 or $13V_{P-P}$ and the frequency the same as the Input Horizontal Frequency.

Passed: Q510 or Q511 may have failed.

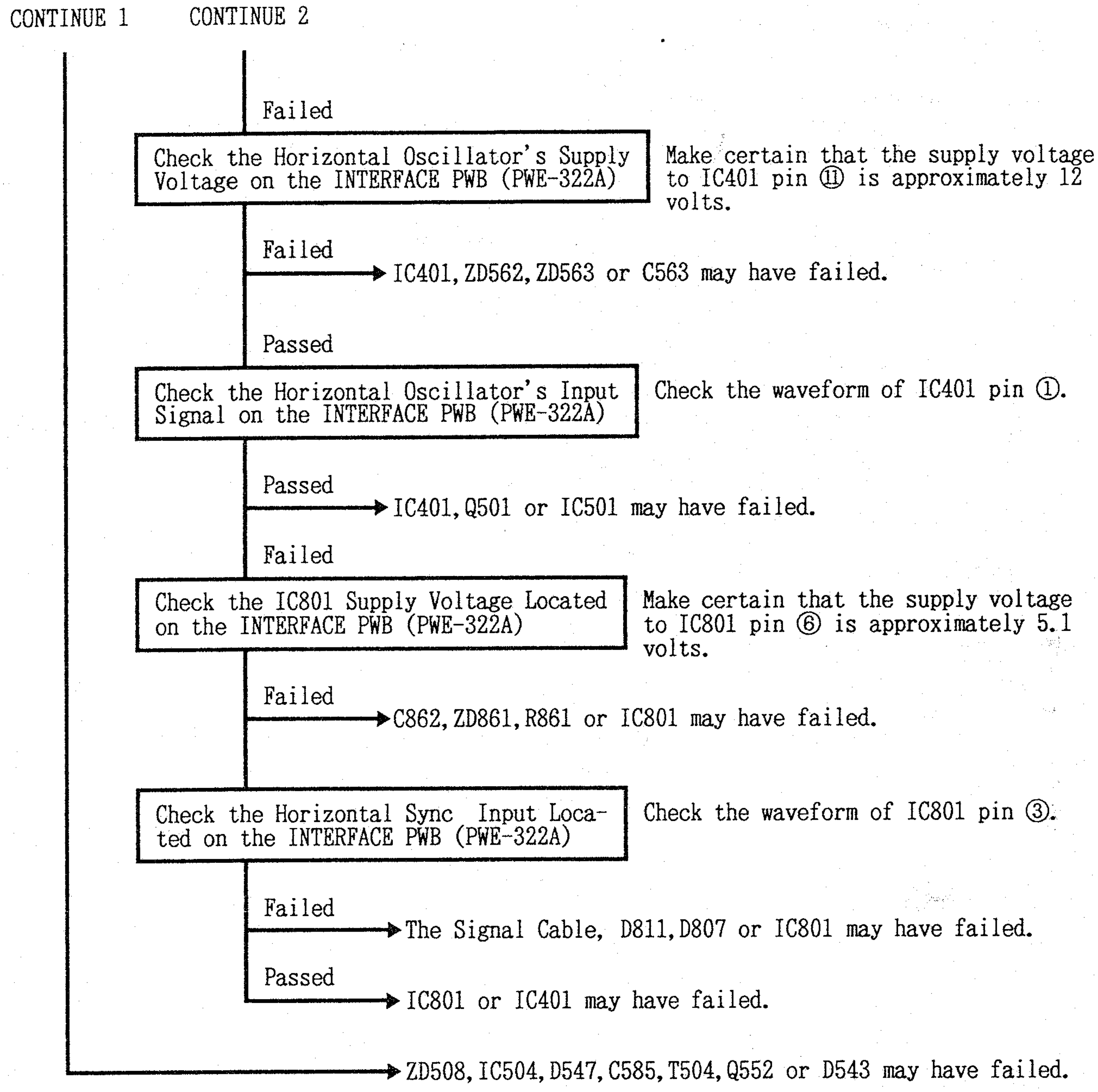
Failed: Check the Horizontal Oscillator's Output Located on the INTERFACE PWB (PWE-322A)

Check the waveform of IC401 pin ⑬.

Passed: CN-Z may have failed or is disconnected.

Too Low or Too High: CONTINUE 1

CONTINUE 2



Failed

Check the Horizontal Oscillator's Supply Voltage on the INTERFACE PWB (PWE-322A)

Make certain that the supply voltage to IC401 pin ⑪ is approximately 12 volts.

Failed → IC401, ZD562, ZD563 or C563 may have failed.

Passed

Check the Horizontal Oscillator's Input Signal on the INTERFACE PWB (PWE-322A)

Check the waveform of IC401 pin ①.

Passed → IC401, Q501 or IC501 may have failed.

Failed

Check the IC801 Supply Voltage Located on the INTERFACE PWB (PWE-322A)

Make certain that the supply voltage to IC801 pin ⑥ is approximately 5.1 volts.

Failed → C862, ZD861, R861 or IC801 may have failed.

Check the Horizontal Sync Input Located on the INTERFACE PWB (PWE-322A)

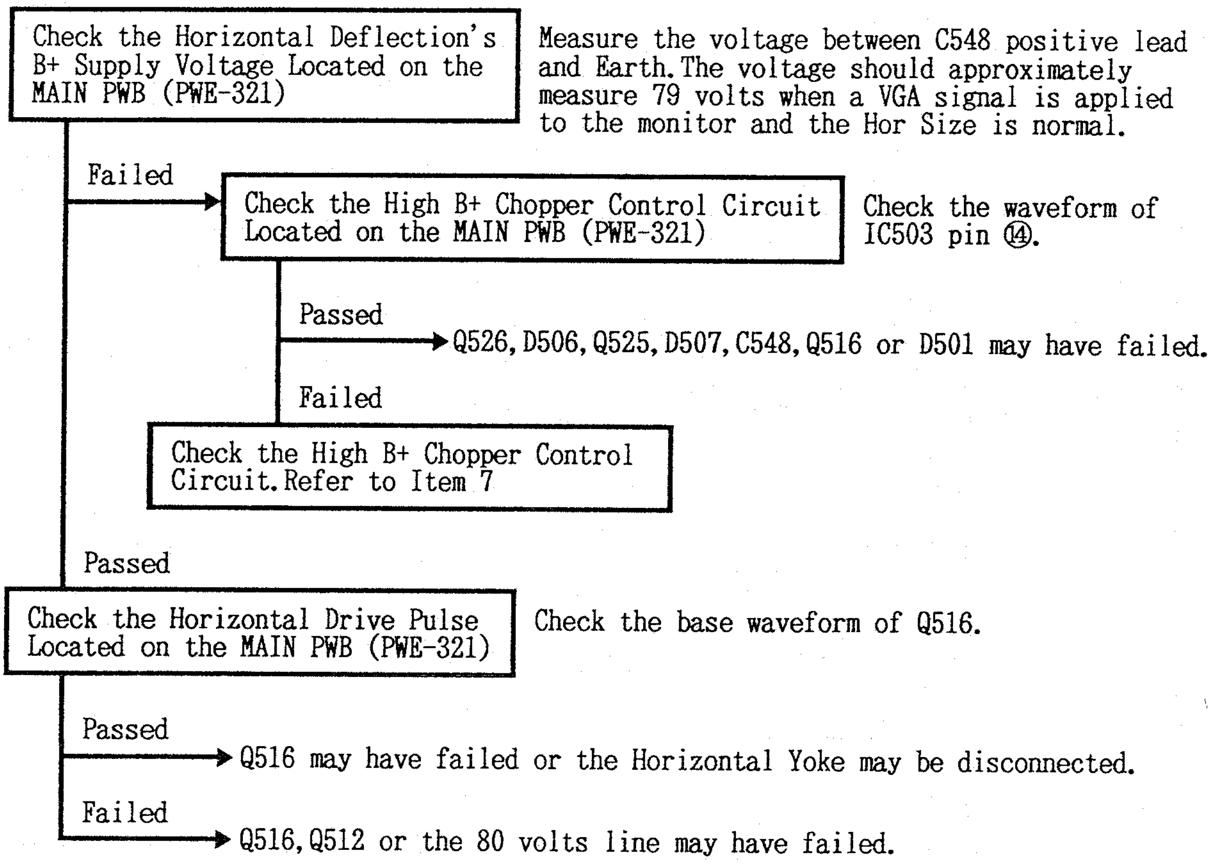
Check the waveform of IC801 pin ③.

Failed → The Signal Cable, D811, D807 or IC801 may have failed.

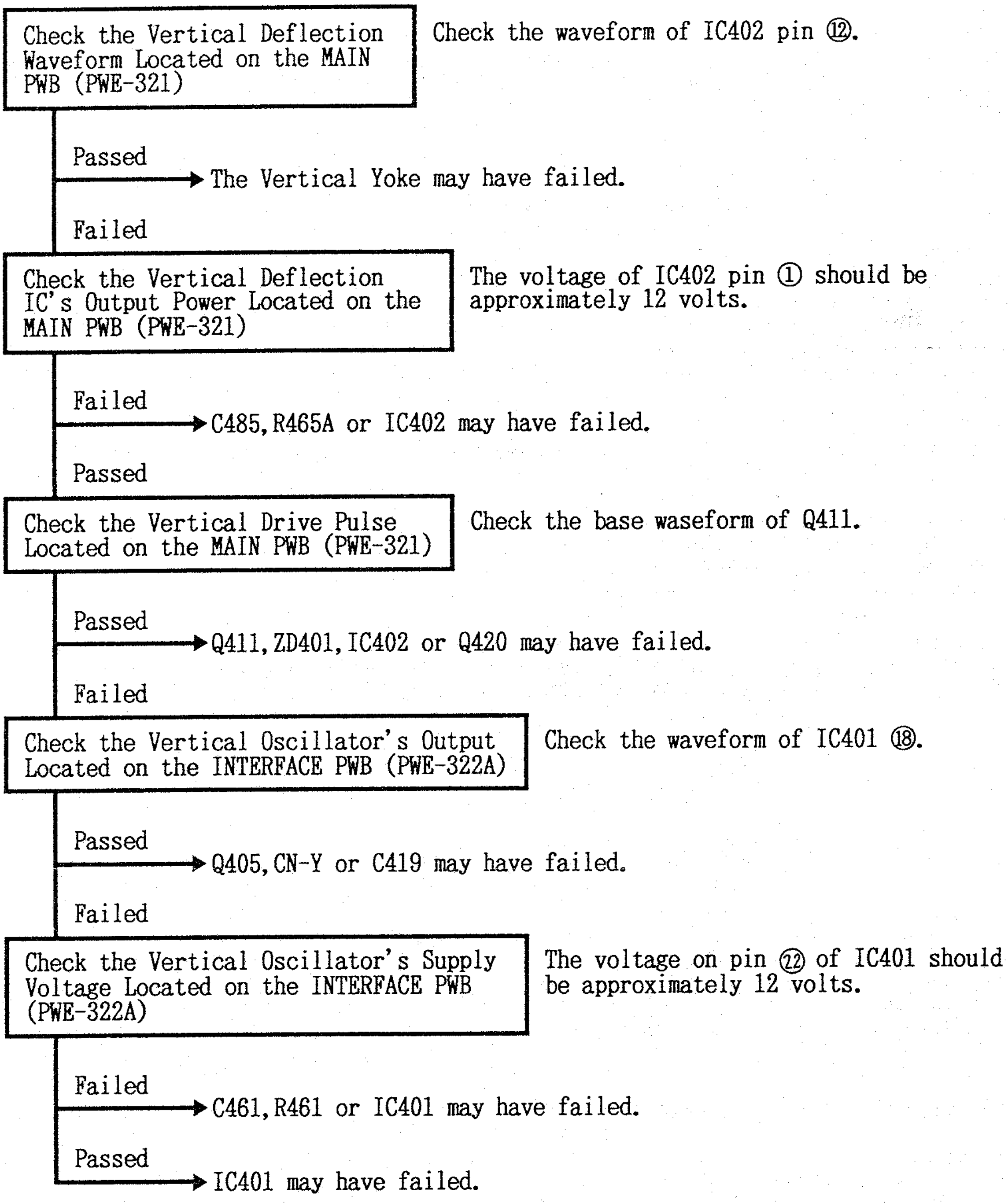
Passed → IC801 or IC401 may have failed.

→ ZD508, IC504, D547, C585, T504, Q552 or D543 may have failed.

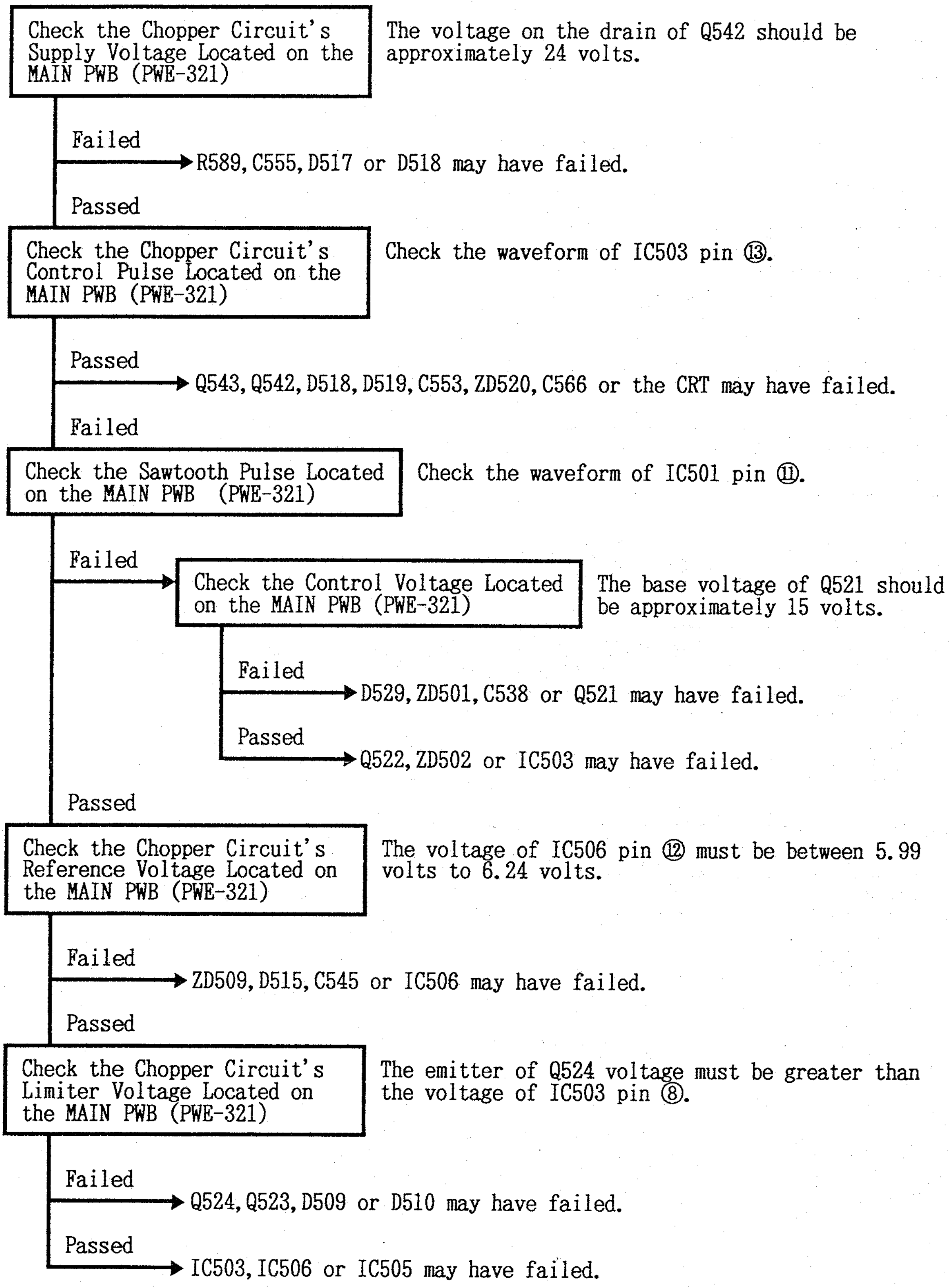
4. NO HORIZONTAL DEFLECTION


Check the Horizontal Deflection's B+ Supply Voltage Located on the MAIN PWB (PWE-321)
Measure the voltage between C548 positive lead and Earth. The voltage should approximately measure 79 volts when a VGA signal is applied to the monitor and the Hor Size is normal.
Failed
Check the High B+ Chopper Control Circuit Located on the MAIN PWB (PWE-321)
Check the waveform of IC503 pin ⑭.
Passed
Q526, D506, Q525, D507, C548, Q516 or D501 may have failed.
Failed
Check the High B+ Chopper Control Circuit. Refer to Item 7
Passed
Check the Horizontal Drive Pulse Located on the MAIN PWB (PWE-321)
Check the base waveform of Q516.
Passed
Q516 may have failed or the Horizontal Yoke may be disconnected.
Failed
Q516, Q512 or the 80 volts line may have failed.

5. NO VERTICAL DEFLECTION


Check the Vertical Deflection Waveform Located on the MAIN PWB (PWE-321)
Check the waveform of IC402 pin ⑫.
Passed
The Vertical Yoke may have failed.
Failed
Check the Vertical Deflection IC's Output Power Located on the MAIN PWB (PWE-321)
The voltage of IC402 pin ① should be approximately 12 volts.
Failed
C485, R465A or IC402 may have failed.
Passed
Check the Vertical Drive Pulse Located on the MAIN PWB (PWE-321)
Check the base waseform of Q411.
Passed
Q411, ZD401, IC402 or Q420 may have failed.
Failed
Check the Vertical Oscillator's Output Located on the INTERFACE PWB (PWE-322A)
Check the waveform of IC401 ⑱.
Passed
Q405, CN-Y or C419 may have failed.
Failed
Check the Vertical Oscillator's Supply Voltage Located on the INTERFACE PWB (PWE-322A)
The voltage on pin ㉒ of IC401 should be approximately 12 volts.
Failed
C461, R461 or IC401 may have failed.
Passed
IC401 may have failed.

6. LOW B+ CHOPPER CONTROL CIRCUIT OR THE HEATER SUPPLY VOLTAGE FAILURE



Check the Chopper Circuit's Supply Voltage Located on the MAIN PWB (PWE-321)

The voltage on the drain of Q542 should be approximately 24 volts.

Failed → R589, C555, D517 or D518 may have failed.

Passed

Check the Chopper Circuit's Control Pulse Located on the MAIN PWB (PWE-321)

Check the waveform of IC503 pin ⑬.

Passed → Q543, Q542, D518, D519, C553, ZD520, C566 or the CRT may have failed.

Failed

Check the Sawtooth Pulse Located on the MAIN PWB (PWE-321)

Check the waveform of IC501 pin ⑪.

Failed → Check the Control Voltage Located on the MAIN PWB (PWE-321)

The base voltage of Q521 should be approximately 15 volts.

Failed → D529, ZD501, C538 or Q521 may have failed.

Passed → Q522, ZD502 or IC503 may have failed.

Passed

Check the Chopper Circuit's Reference Voltage Located on the MAIN PWB (PWE-321)

The voltage of IC506 pin ⑫ must be between 5.99 volts to 6.24 volts.

Failed → ZD509, D515, C545 or IC506 may have failed.

Passed

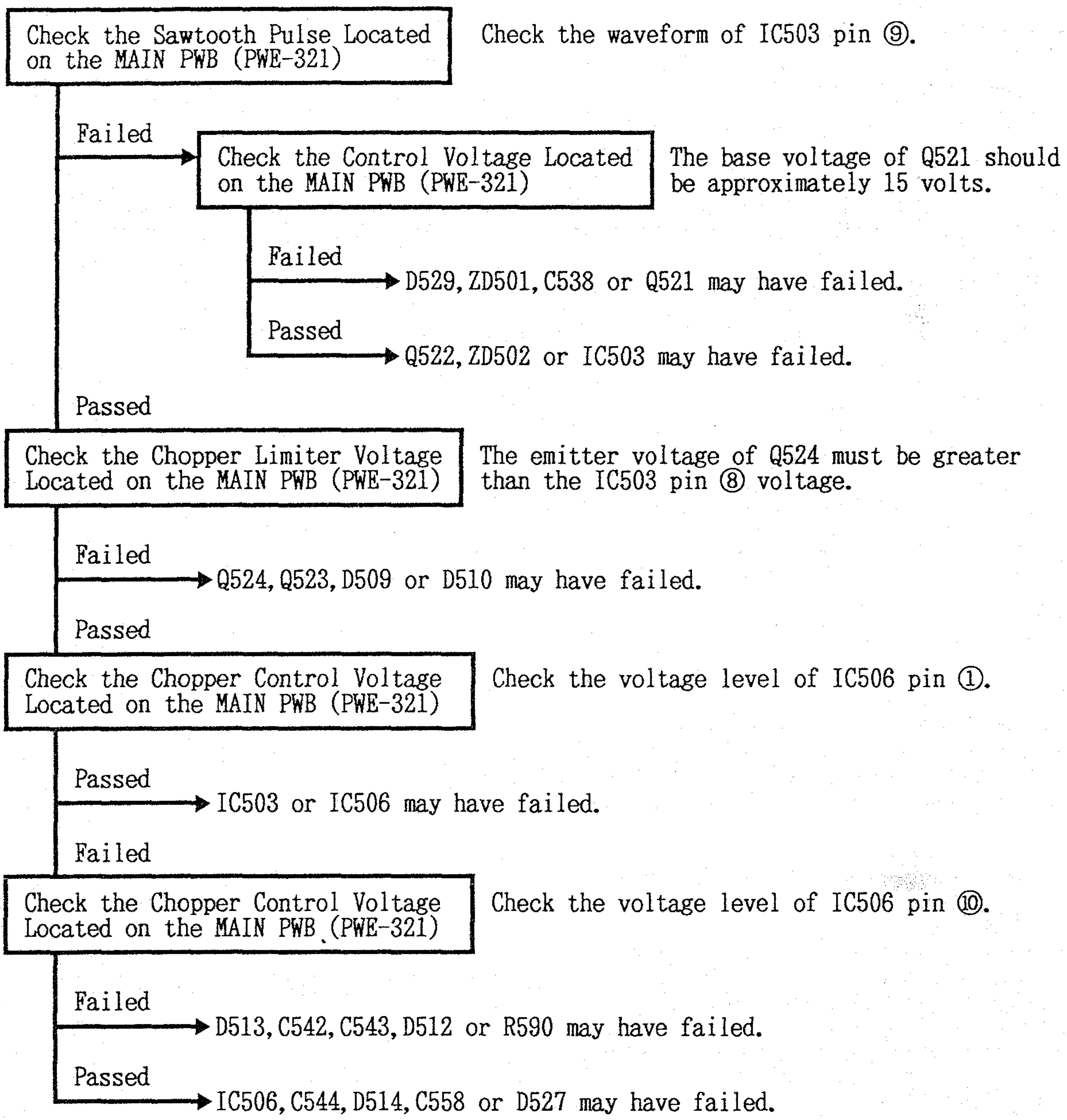
Check the Chopper Circuit's Limiter Voltage Located on the MAIN PWB (PWE-321)

The emitter of Q524 voltage must be greater than the voltage of IC503 pin ⑧.

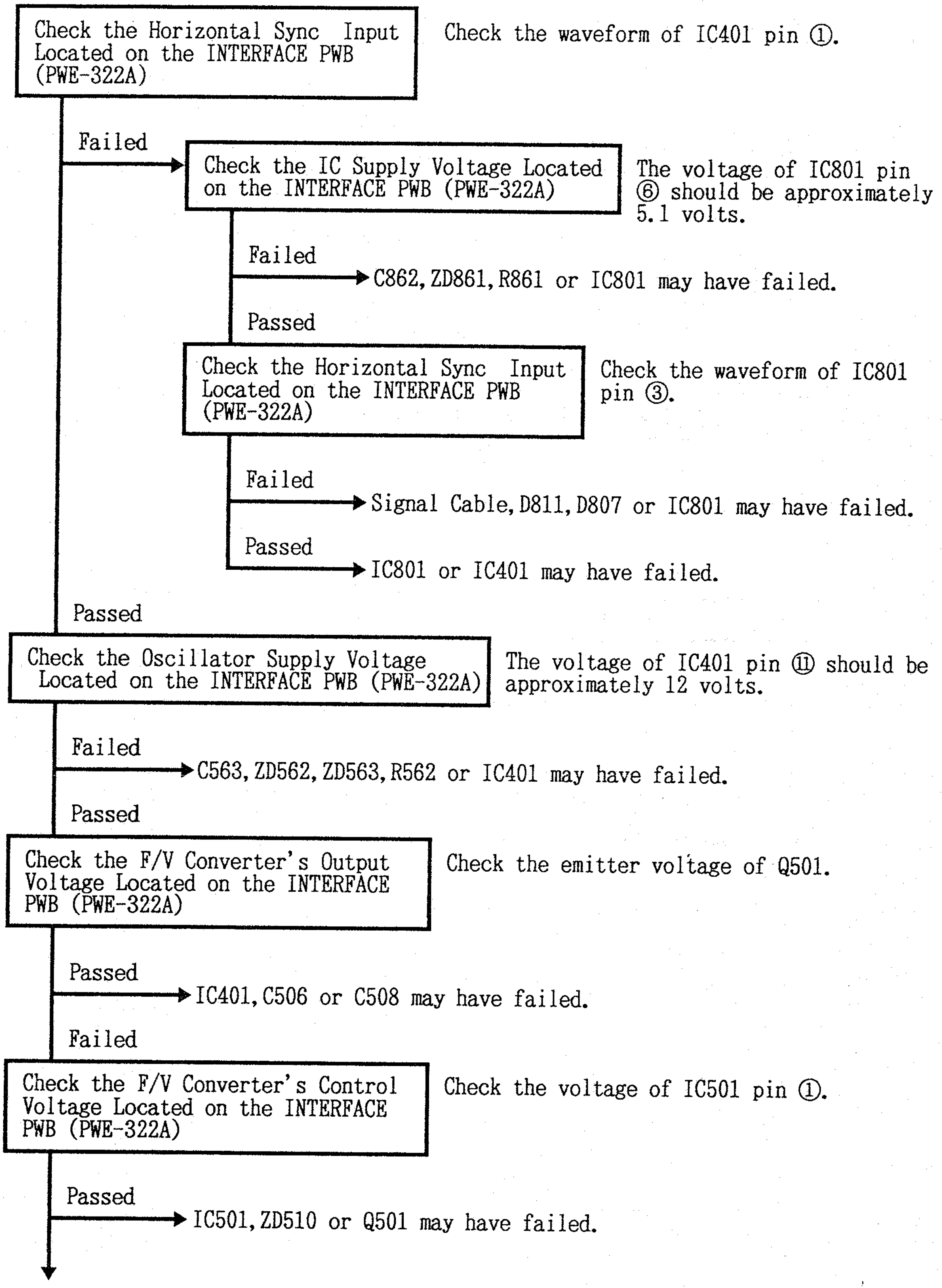
Failed → Q524, Q523, D509 or D510 may have failed.

Passed → IC503, IC506 or IC505 may have failed.

7. HIGH B+ CHOPPER CONTROL CIRCUIT OR THE B+ FOR THE DEFLECTION CIRCUIT FAILURE


Check the Sawtooth Pulse Located on the MAIN PWB (PWE-321)
Check the waveform of IC503 pin ⑨.
Failed
Check the Control Voltage Located on the MAIN PWB (PWE-321)
The base voltage of Q521 should be approximately 15 volts.
Failed
D529, ZD501, C538 or Q521 may have failed.
Passed
Q522, ZD502 or IC503 may have failed.
Passed
Check the Chopper Limiter Voltage Located on the MAIN PWB (PWE-321)
The emitter voltage of Q524 must be greater than the IC503 pin ⑧ voltage.
Failed
Q524, Q523, D509 or D510 may have failed.
Passed
Check the Chopper Control Voltage Located on the MAIN PWB (PWE-321)
Check the voltage level of IC506 pin ①.
Passed
IC503 or IC506 may have failed.
Failed
Check the Chopper Control Voltage Located on the MAIN PWB (PWE-321)
Check the voltage level of IC506 pin ⑩.
Failed
D513, C542, C543, D512 or R590 may have failed.
Passed
IC506, C544, D514, C558 or D527 may have failed.

8. UNSTABLE HORIZONTAL SYNCHRONIZATION



Check the Horizontal Sync Input Located on the INTERFACE PWB (PWE-322A)

Check the waveform of IC401 pin ①.

Failed

Check the IC Supply Voltage Located on the INTERFACE PWB (PWE-322A)

The voltage of IC801 pin ⑥ should be approximately 5.1 volts.

Failed

C862, ZD861, R861 or IC801 may have failed.

Passed

Check the Horizontal Sync Input Located on the INTERFACE PWB (PWE-322A)

Check the waveform of IC801 pin ③.

Failed

Signal Cable, D811, D807 or IC801 may have failed.

Passed

IC801 or IC401 may have failed.

Passed

Check the Oscillator Supply Voltage Located on the INTERFACE PWB (PWE-322A)

The voltage of IC401 pin ⑪ should be approximately 12 volts.

Failed

C563, ZD562, ZD563, R562 or IC401 may have failed.

Passed

Check the F/V Converter's Output Voltage Located on the INTERFACE PWB (PWE-322A)

Check the emitter voltage of Q501.

Passed

IC401, C506 or C508 may have failed.

Failed

Check the F/V Converter's Control Voltage Located on the INTERFACE PWB (PWE-322A)

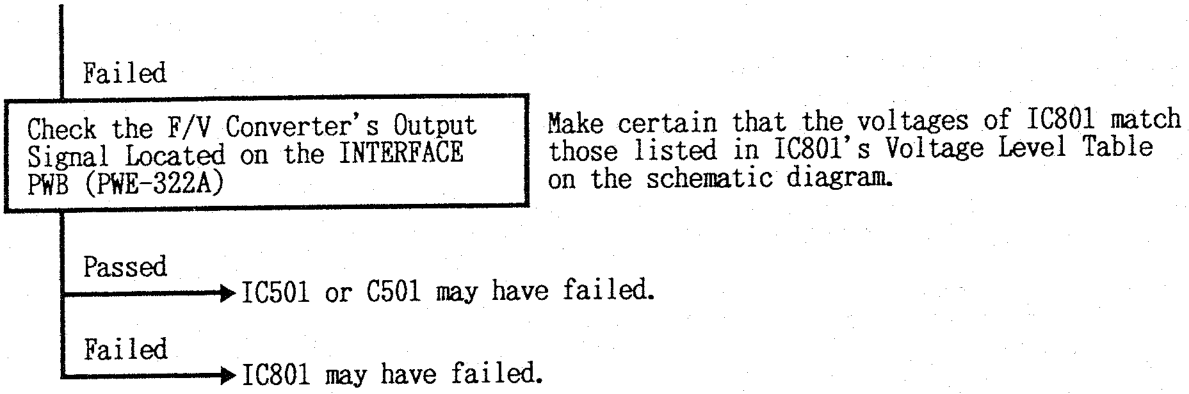
Check the voltage of IC501 pin ①.

Passed

IC501, ZD510 or Q501 may have failed.

CONTINUE

CONTINUE



Failed

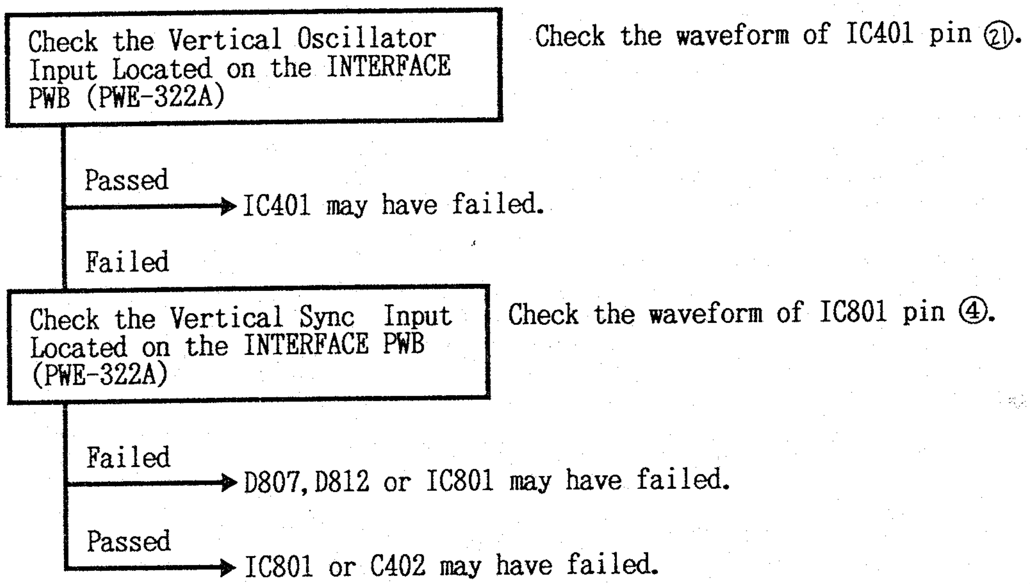
Check the F/V Converter's Output Signal Located on the INTERFACE PWB (PWE-322A)

Make certain that the voltages of IC801 match those listed in IC801's Voltage Level Table on the schematic diagram.

Passed → IC501 or C501 may have failed.

Failed → IC801 may have failed.

9. UNSTABLE VERTICAL SYNCHRONIZATION



Check the Vertical Oscillator Input Located on the INTERFACE PWB (PWE-322A)

Check the waveform of IC401 pin ㉑.

Passed → IC401 may have failed.

Failed

Check the Vertical Sync Input Located on the INTERFACE PWB (PWE-322A)

Check the waveform of IC801 pin ④.

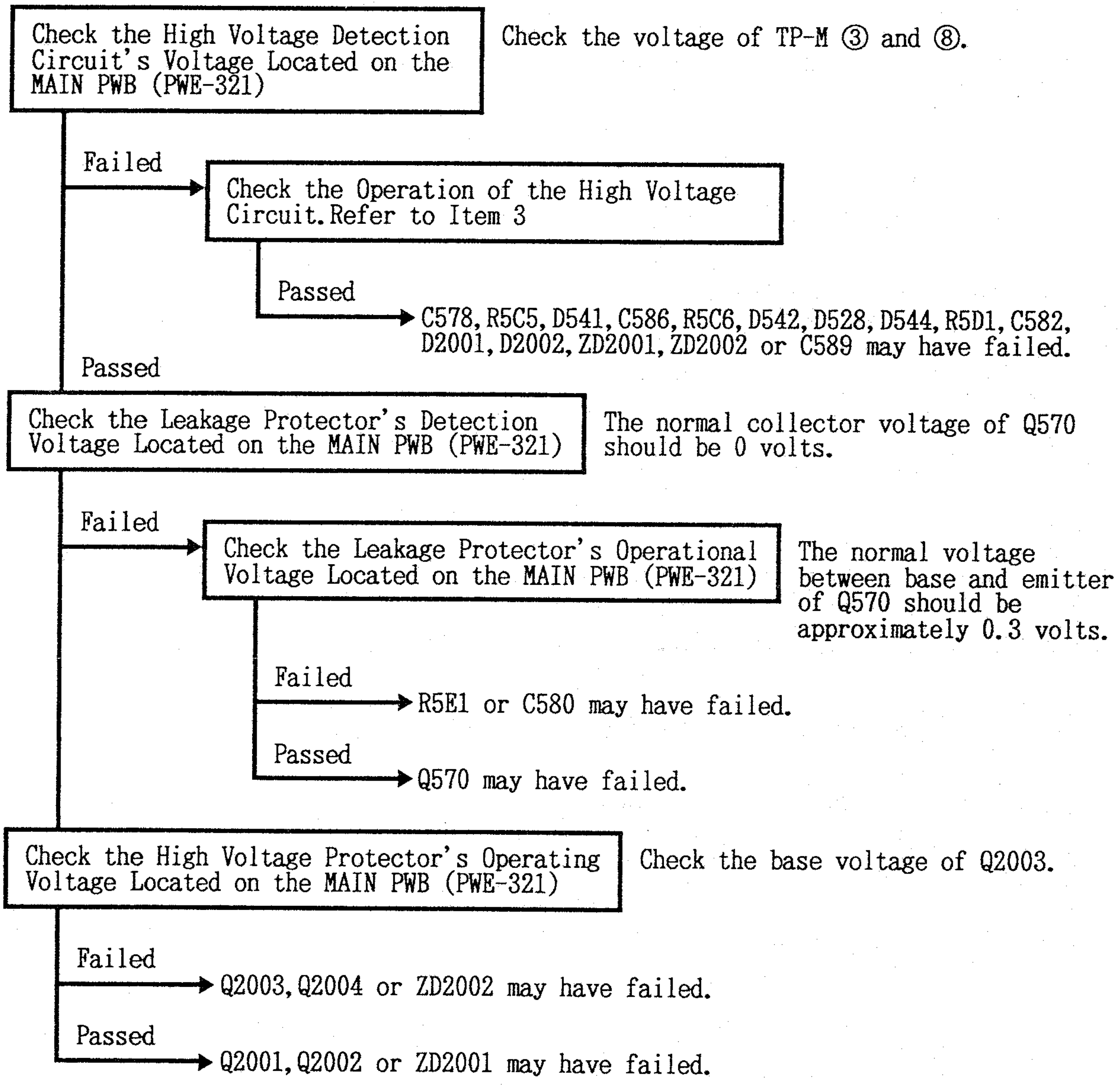
Failed → D807, D812 or IC801 may have failed.

Passed → IC801 or C402 may have failed.

10. HIGH VOLTAGE PROTECTOR INCORRECT OPERATION OR FAILURE

CAUTION: When the High Voltage circuit is operating, the Horizontal Deflection Circuit is also operating. Therefore, the collector of Q516 has a high voltage pulse of an average value of $1200V_{P-P}$.

Check the following items before manually operating the High Voltage Protector Circuits. The High Voltage Protector Circuits need a few seconds after the power has been turned OFF to reset.



Check the High Voltage Detection Circuit's Voltage Located on the MAIN PWB (PWE-321)

Check the voltage of TP-M ③ and ⑧.

Failed → Check the Operation of the High Voltage Circuit. Refer to Item 3

Passed → C578, R5C5, D541, C586, R5C6, D542, D528, D544, R5D1, C582, D2001, D2002, ZD2001, ZD2002 or C589 may have failed.

Passed

Check the Leakage Protector's Detection Voltage Located on the MAIN PWB (PWE-321)

The normal collector voltage of Q570 should be 0 volts.

Failed → Check the Leakage Protector's Operational Voltage Located on the MAIN PWB (PWE-321)

The normal voltage between base and emitter of Q570 should be approximately 0.3 volts.

Failed → R5E1 or C580 may have failed.

Passed → Q570 may have failed.

Check the High Voltage Protector's Operating Voltage Located on the MAIN PWB (PWE-321)

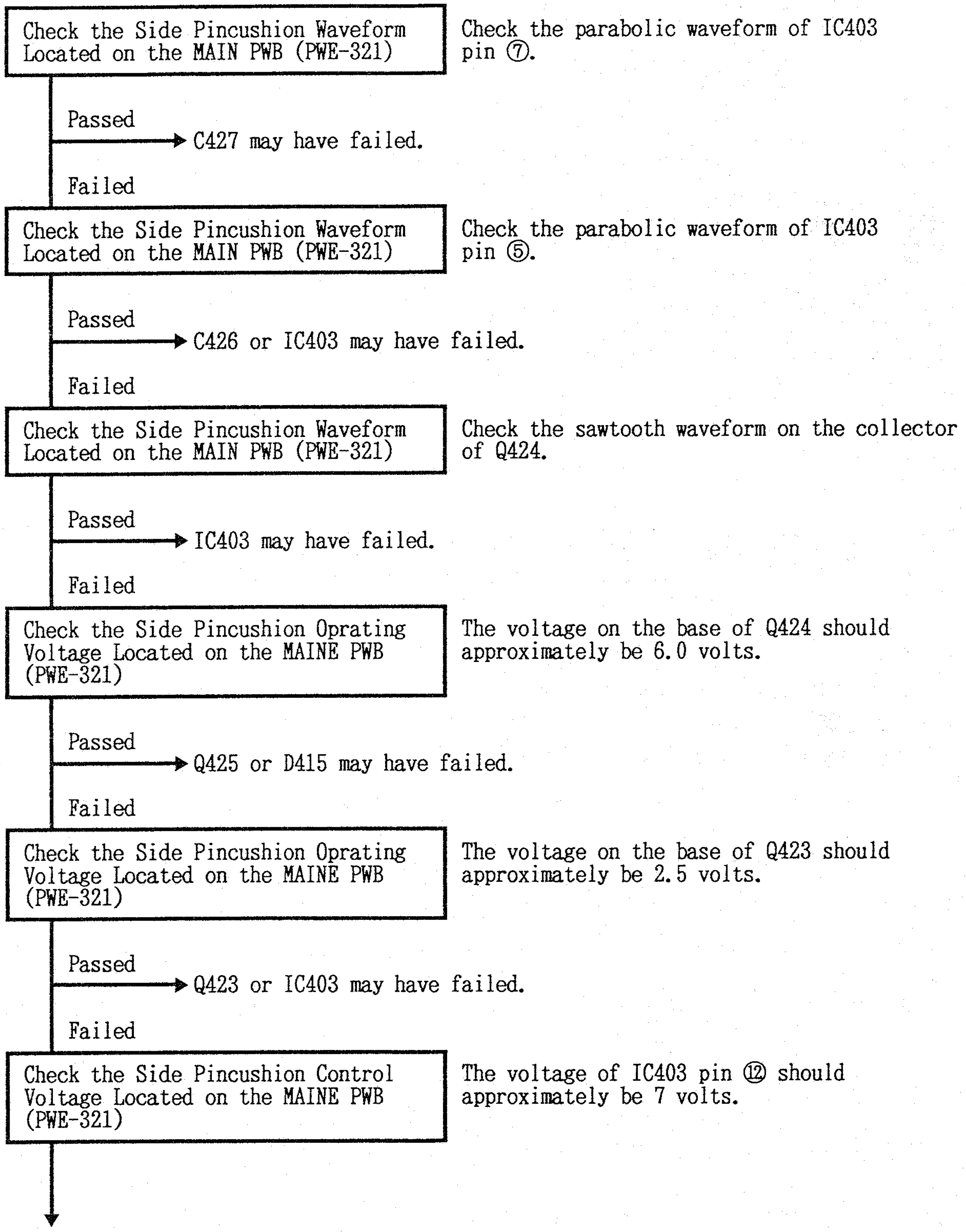
Check the base voltage of Q2003.

Failed → Q2003, Q2004 or ZD2002 may have failed.

Passed → Q2001, Q2002 or ZD2001 may have failed.

11. SIDE PINCUSHION FAILURE

The following can be used when the Side Pincushion Control is not operating properly or the Side Pincushion Control level is not enough:



Check the Side Pincushion Waveform Located on the MAIN PWB (PWE-321)

Check the parabolic waveform of IC403 pin ⑦.

Passed → C427 may have failed.

Failed

Check the Side Pincushion Waveform Located on the MAIN PWB (PWE-321)

Check the parabolic waveform of IC403 pin ⑤.

Passed → C426 or IC403 may have failed.

Failed

Check the Side Pincushion Waveform Located on the MAIN PWB (PWE-321)

Check the sawtooth waveform on the collector of Q424.

Passed → IC403 may have failed.

Failed

Check the Side Pincushion Oprating Voltage Located on the MAINE PWB (PWE-321)

The voltage on the base of Q424 should approximately be 6.0 volts.

Passed → Q425 or D415 may have failed.

Failed

Check the Side Pincushion Oprating Voltage Located on the MAINE PWB (PWE-321)

The voltage on the base of Q423 should approximately be 2.5 volts.

Passed → Q423 or IC403 may have failed.

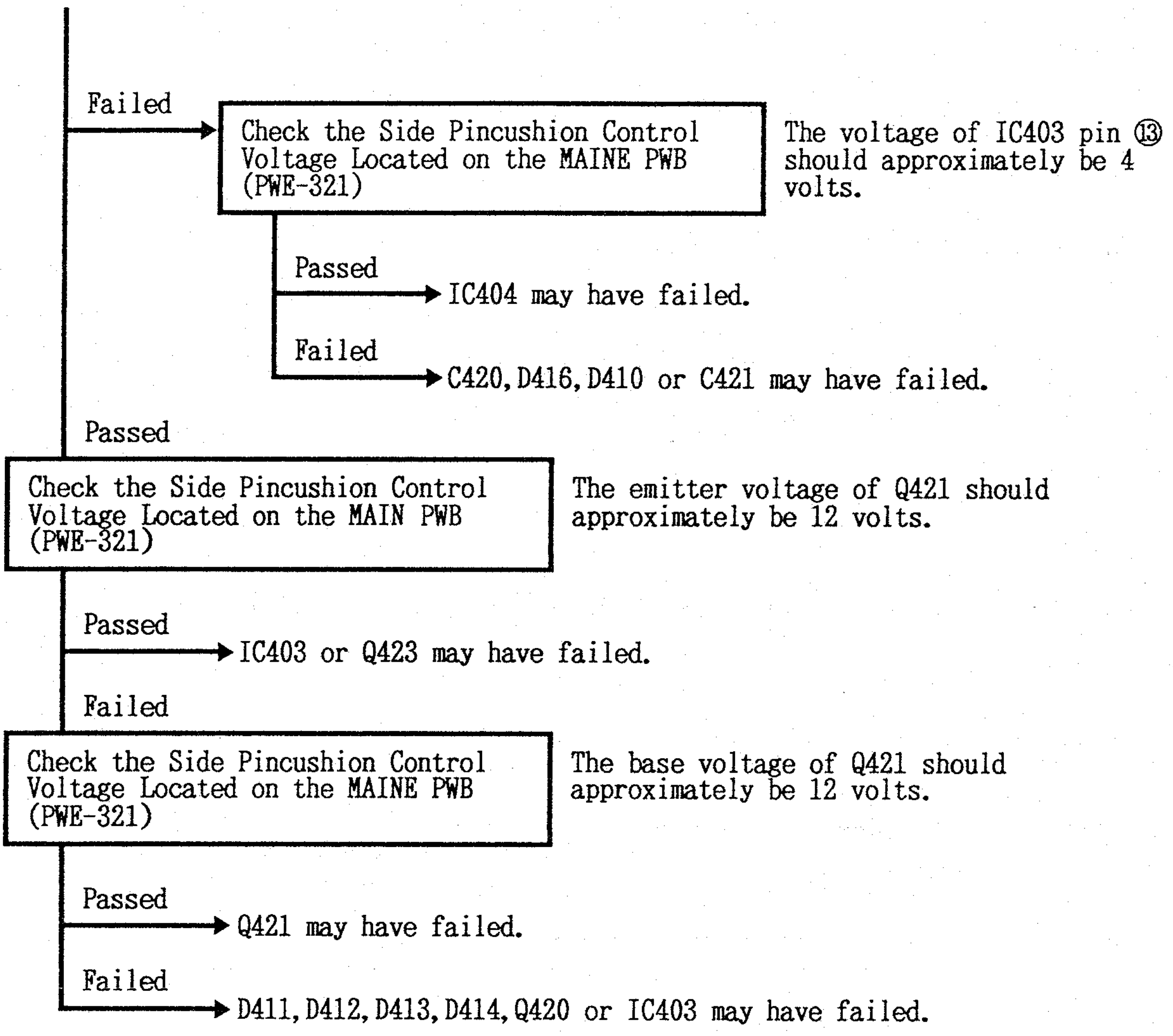
Failed

Check the Side Pincushion Control Voltage Located on the MAINE PWB (PWE-321)

The voltage of IC403 pin ⑫ should approximately be 7 volts.

CONTINUE

CONTINUE



Failed

Check the Side Pincushion Control Voltage Located on the MAINE PWB (PWE-321)

The voltage of IC403 pin ⑬ should approximately be 4 volts.

Passed → IC404 may have failed.

Failed → C420, D416, D410 or C421 may have failed.

Passed

Check the Side Pincushion Control Voltage Located on the MAIN PWB (PWE-321)

The emitter voltage of Q421 should approximately be 12 volts.

Passed → IC403 or Q423 may have failed.

Failed

Check the Side Pincushion Control Voltage Located on the MAINE PWB (PWE-321)

The base voltage of Q421 should approximately be 12 volts.

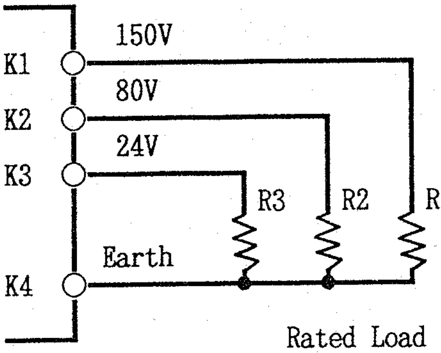
Passed → Q421 may have failed.

Failed → D411, D412, D413, D414, Q420 or IC403 may have failed.

12. SWITCHING REGULATOR POWER SUPPLY UNIT FAILURE

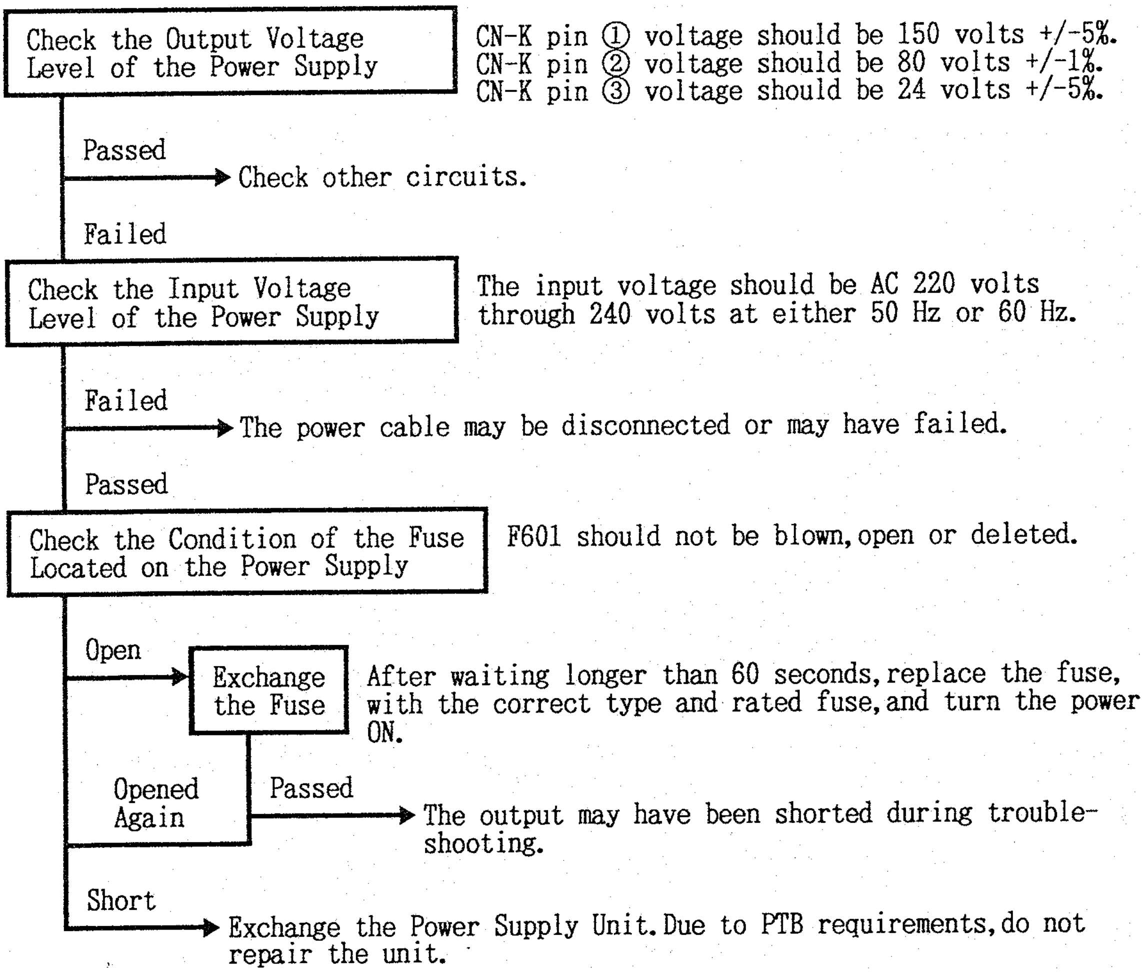
The following can be used either for unstable power output or no output at all:

Before this Troubleshooting section is used, the power supply should be turned OFF and after disconnecting the CN-K connector and connecting the Dummy Resistors Load, with the correct power rating value (see below), wait for a minimum of 60 seconds before the unit is turned ON again.


150V
K1
80V
K2
24V
K3
R3
R2
R1
Earth
K4

K1	150V	R1	80mA 1.5KΩ ±10% 40W
K2	80V	R2	0 A OPEN
K3	24V	R3	0.6A 33Ω ±10% 43W

Rated Load Current and Resister Value


Check the Output Voltage Level of the Power Supply
Passed
Failed
Check the Input Voltage Level of the Power Supply
Failed
Passed
Check the Condition of the Fuse Located on the Power Supply
Open
Exchange the Fuse
Opened Again
Passed
Short

CN-K pin ① voltage should be 150 volts +/-5%.
CN-K pin ② voltage should be 80 volts +/-1%.
CN-K pin ③ voltage should be 24 volts +/-5%.

Check other circuits.

The input voltage should be AC 220 volts through 240 volts at either 50 Hz or 60 Hz.

The power cable may be disconnected or may have failed.

F601 should not be blown, open or deleted.

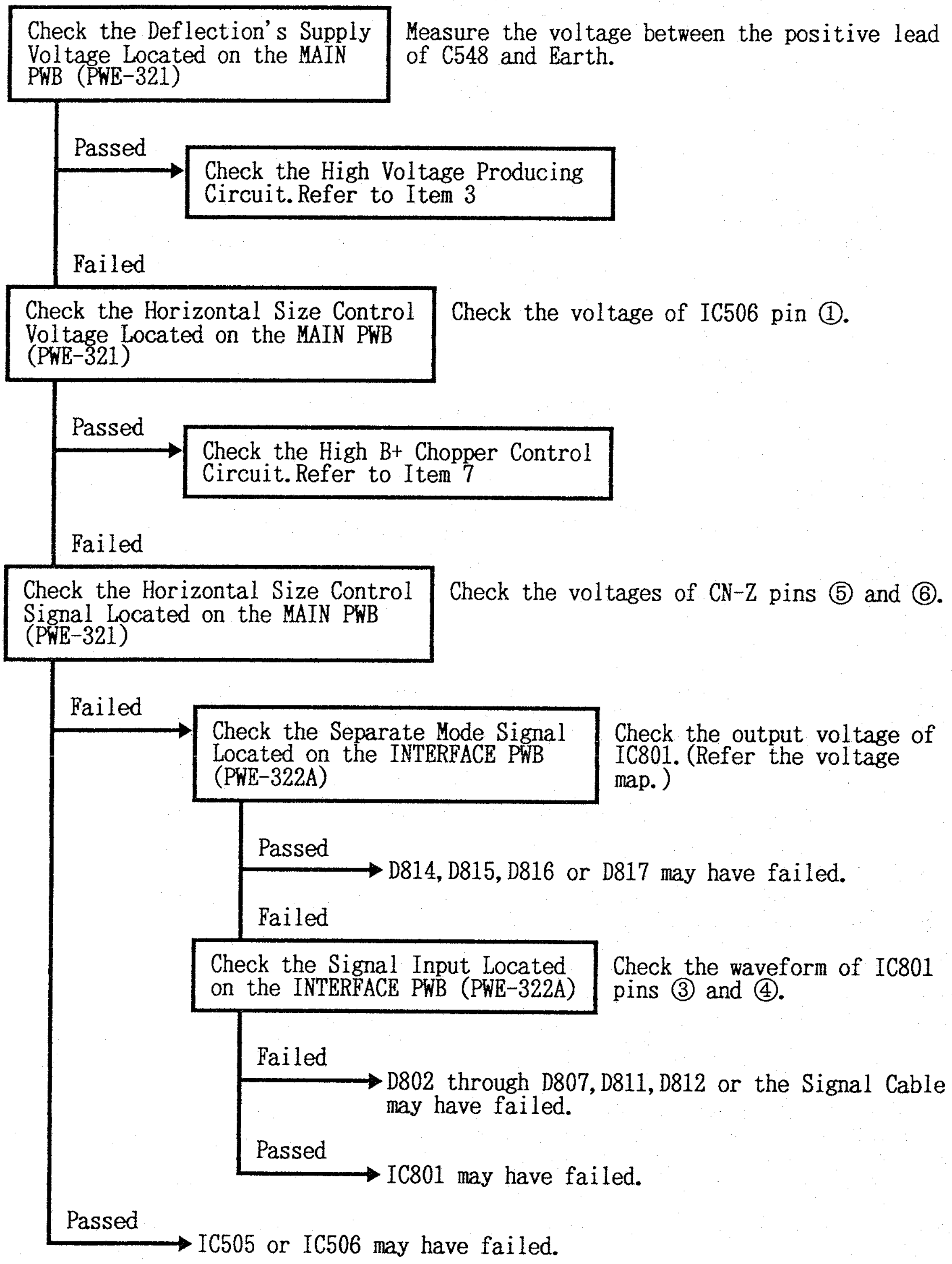
After waiting longer than 60 seconds, replace the fuse, with the correct type and rated fuse, and turn the power ON.

The output may have been shorted during troubleshooting.

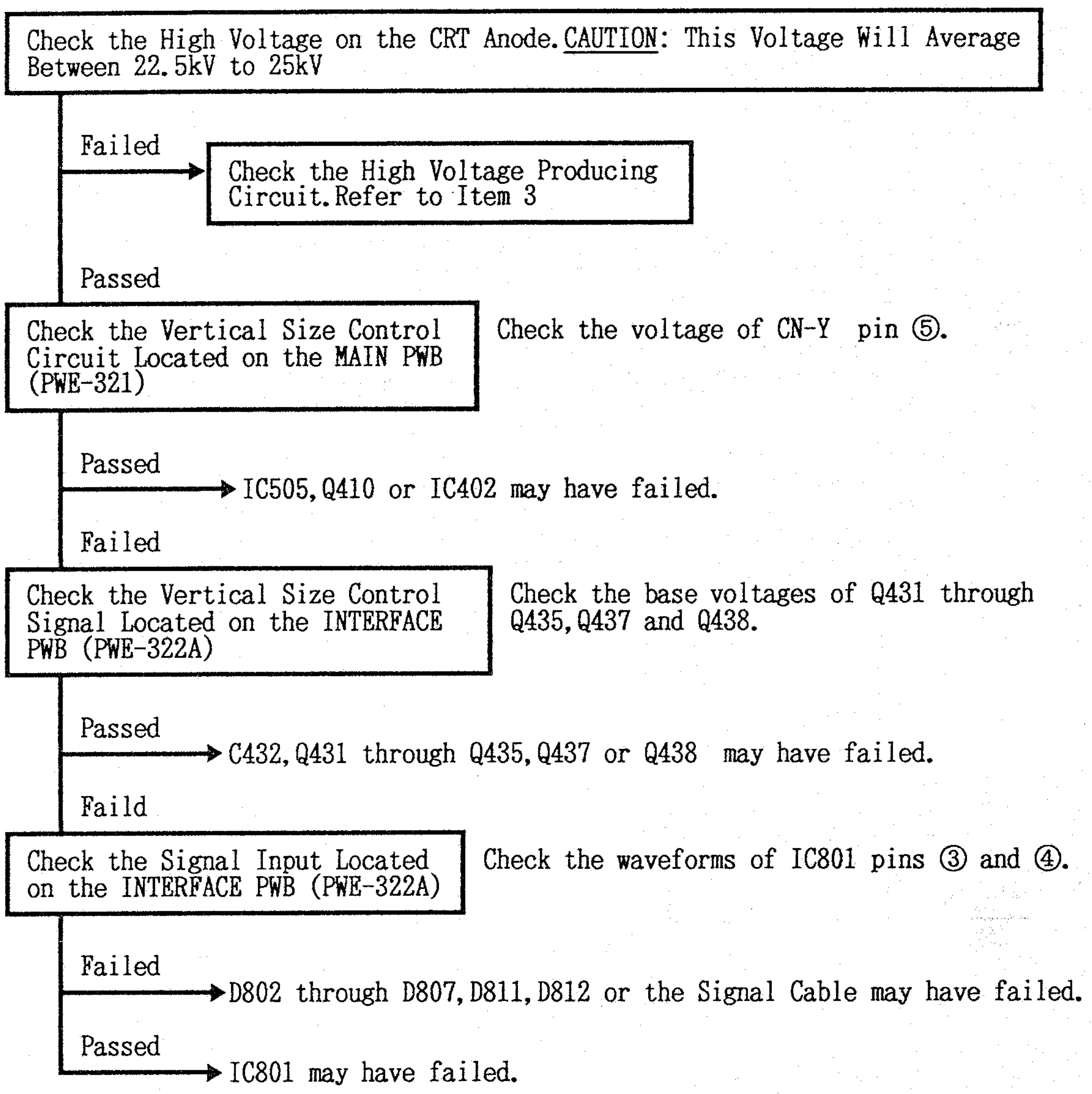
Exchange the Power Supply Unit. Due to PTB requirements, do not repair the unit.

13. IMAGE SIZE FAILURE

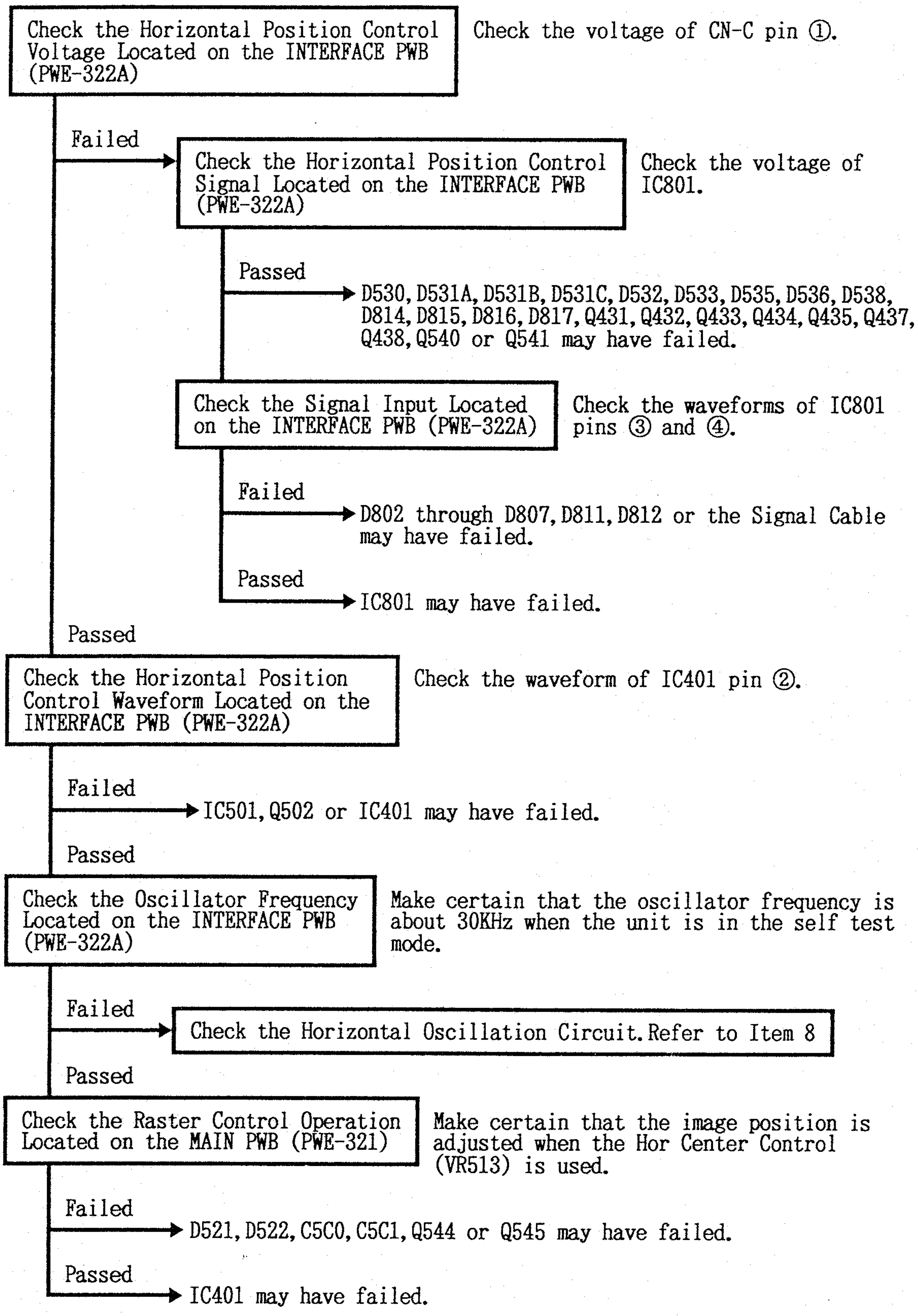
13.1 HORIZONTAL IMAGE SIZE FAILURE OR ABNORMAL FUNCTION


Check the Deflection's Supply Voltage Located on the MAIN PWB (PWE-321)
Measure the voltage between the positive lead of C548 and Earth.
Passed
Check the High Voltage Producing Circuit. Refer to Item 3
Failed
Check the Horizontal Size Control Voltage Located on the MAIN PWB (PWE-321)
Check the voltage of IC506 pin ①.
Passed
Check the High B+ Chopper Control Circuit. Refer to Item 7
Failed
Check the Horizontal Size Control Signal Located on the MAIN PWB (PWE-321)
Check the voltages of CN-Z pins ⑤ and ⑥.
Failed
Check the Separate Mode Signal Located on the INTERFACE PWB (PWE-322A)
Check the output voltage of IC801. (Refer the voltage map.)
Passed
D814, D815, D816 or D817 may have failed.
Failed
Check the Signal Input Located on the INTERFACE PWB (PWE-322A)
Check the waveform of IC801 pins ③ and ④.
Failed
D802 through D807, D811, D812 or the Signal Cable may have failed.
Passed
IC801 may have failed.
Passed
IC505 or IC506 may have failed.

13.2 VERTICAL IMAGE SIZE FAILURE OR ABNORMAL OPERATION


Check the High Voltage on the CRT Anode. CAUTION: This Voltage Will Average Between 22.5kV to 25kV
Failed
Check the High Voltage Producing Circuit. Refer to Item 3
Passed
Check the Vertical Size Control Circuit Located on the MAIN PWB (PWE-321)
Check the voltage of CN-Y pin ⑤.
Passed
IC505, Q410 or IC402 may have failed.
Failed
Check the Vertical Size Control Signal Located on the INTERFACE PWB (PWE-322A)
Check the base voltages of Q431 through Q435, Q437 and Q438.
Passed
C432, Q431 through Q435, Q437 or Q438 may have failed.
Faild
Check the Signal Input Located on the INTERFACE PWB (PWE-322A)
Check the waveforms of IC801 pins ③ and ④.
Failed
D802 through D807, D811, D812 or the Signal Cable may have failed.
Passed
IC801 may have failed.

14. ABNORMAL HORIZONTAL IMAGE POSITION FAILURE


Check the Horizontal Position Control Voltage Located on the INTERFACE PWB (PWE-322A)
Check the voltage of CN-C pin ①.
Failed
Check the Horizontal Position Control Signal Located on the INTERFACE PWB (PWE-322A)
Check the voltage of IC801.
Passed
D530, D531A, D531B, D531C, D532, D533, D535, D536, D538, D814, D815, D816, D817, Q431, Q432, Q433, Q434, Q435, Q437, Q438, Q540 or Q541 may have failed.
Check the Signal Input Located on the INTERFACE PWB (PWE-322A)
Check the waveforms of IC801 pins ③ and ④.
Failed
D802 through D807, D811, D812 or the Signal Cable may have failed.
Passed
IC801 may have failed.
Passed
Check the Horizontal Position Control Waveform Located on the INTERFACE PWB (PWE-322A)
Check the waveform of IC401 pin ②.
Failed
IC501, Q502 or IC401 may have failed.
Passed
Check the Oscillator Frequency Located on the INTERFACE PWB (PWE-322A)
Make certain that the oscillator frequency is about 30KHz when the unit is in the self test mode.
Failed
Check the Horizontal Oscillation Circuit. Refer to Item 8
Passed
Check the Raster Control Operation Located on the MAIN PWB (PWE-321)
Make certain that the image position is adjusted when the Hor Center Control (VR513) is used.
Failed
D521, D522, C5C0, C5C1, Q544 or Q545 may have failed.
Passed
IC401 may have failed.

15. USER CONTROL FAILURE

15.1 BRIGHTNESS USER CONTROL FAILURE

Check the Brighttness Control Voltage Located on the CRT PWB (PWE-322B)

The voltage on the emitter of Q922 should decrease when the Brightness Control is turned clockwise and increase when the control is turned counterclockwise.

Failed
→ Q922 may have failed.

Passed

Check the Brightness Control's Operation

The brightness does not change for the all colors (Red, Green, Blue).
→ Q921 or D961 may have failed.

The brightness does not change for the Red color.
→ Q931R, Q932R or D931R may have failed.

The brightness does not change for the Green color.
→ Q931G, Q932G or D931G may have failed.

The brightness does not change for the Blue color.
→ Q931B, Q932B or D931B may have failed.

15.2 CONTRAST USER CONTROL FAILURE

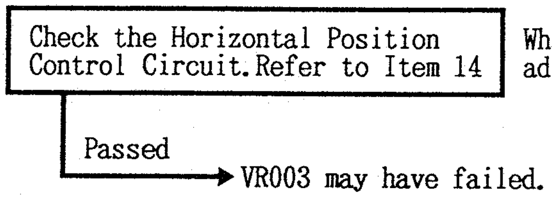
Check the Contrast Control's Voltage Located on the INTERFACE PWB (PWE-322A)

The collector voltage of Q783 should increase when the CONTRAST CONTROL is turned clockwise and decrease when the control is turned counterclockwise.

Failed
→ Q781, Q782 or Q783 may have failed.

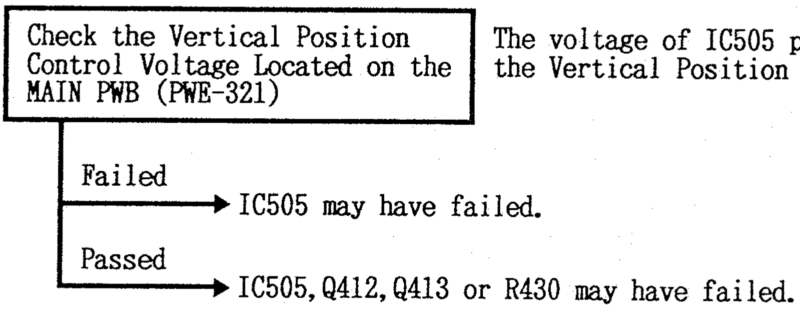
Passed
→ IC751 may have failed.

15.3 HORIZONTAL POSITION CONTROL FAILURE OR ABNORMAL OPERATION


Check the Horizontal Position Control Circuit. Refer to Item 14
Passed
VR003 may have failed.

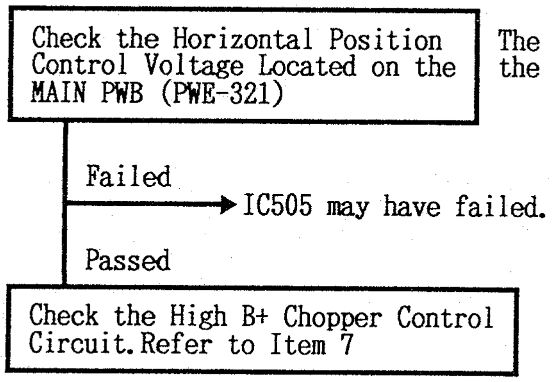
When the Horizontal Position Control (VR003) is adjusted, the voltage should change.

15.4 VERTICAL POSITION CONTROL FAILURE OR ABNORMAL OPERATION


Check the Vertical Position Control Voltage Located on the MAIN PWB (PWE-321)
Failed
IC505 may have failed.
Passed
IC505, Q412, Q413 or R430 may have failed.

The voltage of IC505 pin ⑫ should change when the Vertical Position Control (VR004) is adjusted.

15.5 HORIZONTAL SIZE CONTROL FAILURE OR ABNORMAL OPERATION


Check the Horizontal Position Control Voltage Located on the MAIN PWB (PWE-321)
Failed
IC505 may have failed.
Passed
Check the High B+ Chopper Control Circuit. Refer to Item 7

The voltage of IC505 pin ② should change when the Horizontal Position Control (VR005) is adjusted.

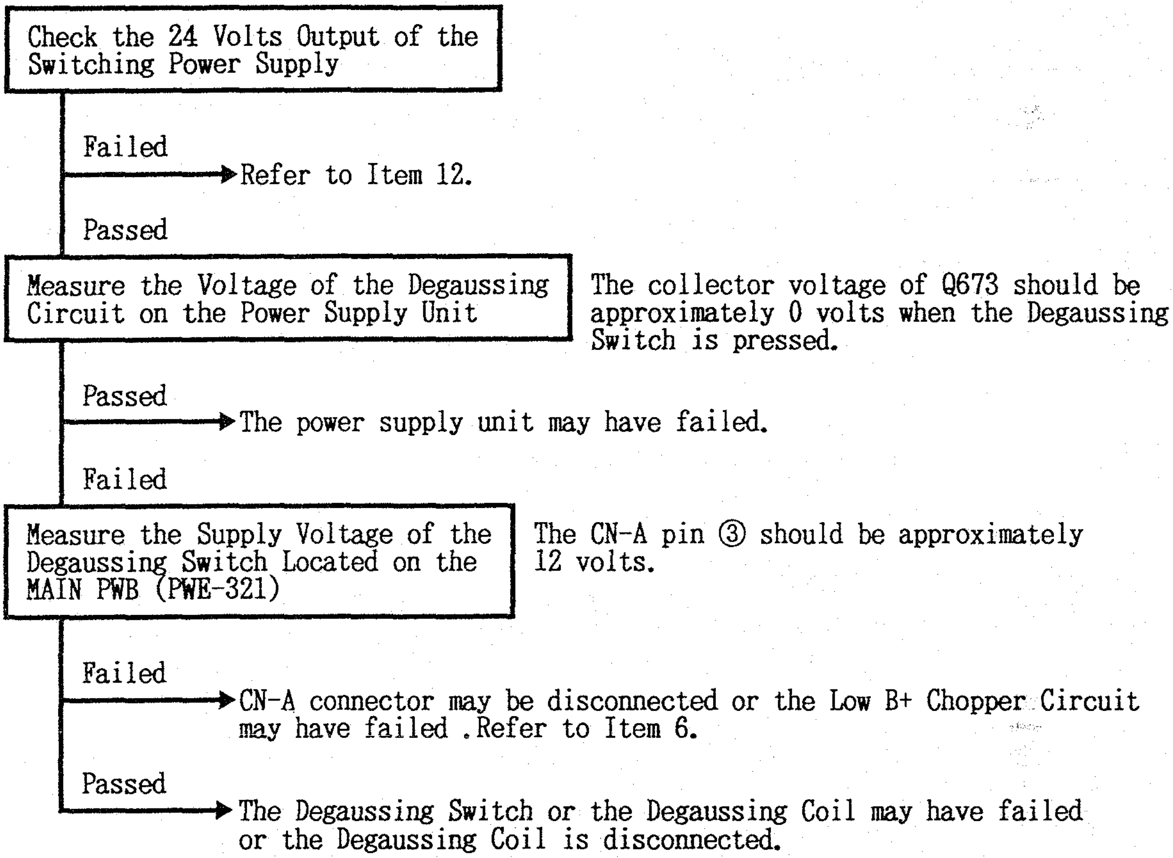
15.6 VERTICAL SIZE CONTROL FAILURE OR ABNORMAL OPERATION

IC505, Q410 or IC402 may have failed.

15.7 SIDE PINCUSHION CONTROL FAILURE OR ABNORMAL OPERATION

Check the Side Pincushion Circuit. Refer to Item 11.

15.8 MANUAL DEGAUSS SWITCH NOT OPERATIVE



Check the 24 Volts Output of the Switching Power Supply

Failed → Refer to Item 12.

Passed

Measure the Voltage of the Degaussing Circuit on the Power Supply Unit

The collector voltage of Q673 should be approximately 0 volts when the Degaussing Switch is pressed.

Passed → The power supply unit may have failed.

Failed

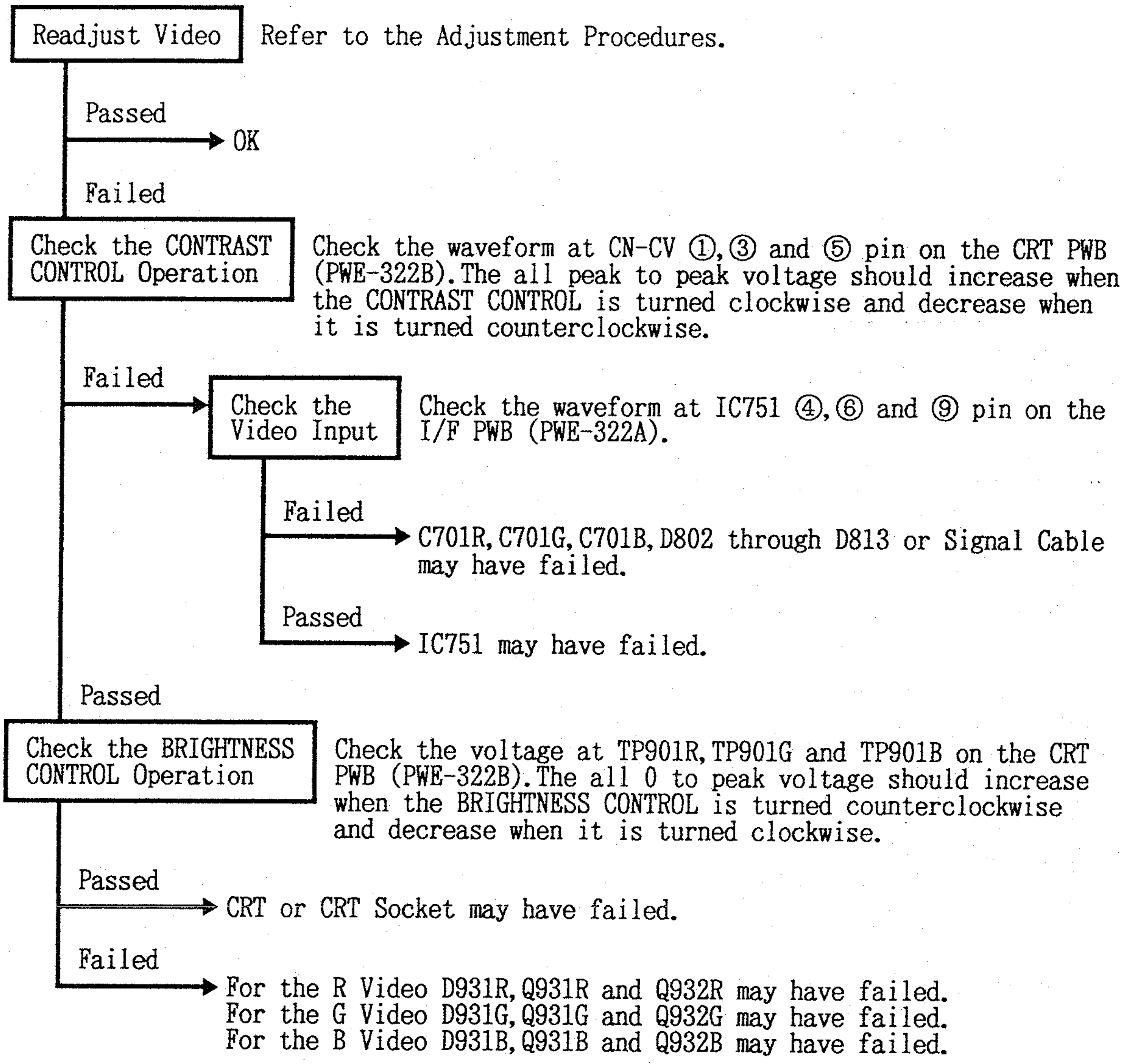
Measure the Supply Voltage of the Degaussing Switch Located on the MAIN PWB (PWE-321)

The CN-A pin ③ should be approximately 12 volts.

Failed → CN-A connector may be disconnected or the Low B+ Chopper Circuit may have failed. Refer to Item 6.

Passed → The Degaussing Switch or the Degaussing Coil may have failed or the Degaussing Coil is disconnected.

16. ABNORMAL WHITE BALANCE


Readjust Video

Refer to the Adjustment Procedures.

Passed
OK
Failed
Check the CONTRAST CONTROL Operation

Check the waveform at CN-CV ①,③ and ⑤ pin on the CRT PWB (PWE-322B).The all peak to peak voltage should increase when the CONTRAST CONTROL is turned clockwise and decrease when it is turned counterclockwise.

Failed
Check the Video Input

Check the waveform at IC751 ④,⑥ and ⑨ pin on the I/F PWB (PWE-322A).

Failed

C701R,C701G,C701B,D802 through D813 or Signal Cable may have failed.

IC751 may have failed.

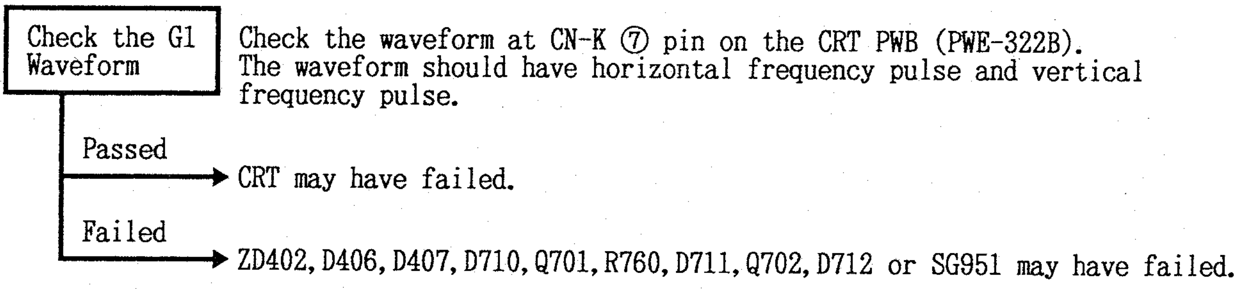
Passed
Check the BRIGHTNESS CONTROL Operation

Check the voltage at TP901R,TP901G and TP901B on the CRT PWB (PWE-322B).The all 0 to peak voltage should increase when the BRIGHTNESS CONTROL is turned counterclockwise and decrease when it is turned clockwise.

CRT or CRT Socket may have failed.

For the R Video D931R,Q931R and Q932R may have failed.
For the G Video D931G,Q931G and Q932G may have failed.
For the B Video D931B,Q931B and Q932B may have failed.

17. BLANKING CIRCUIT FAILURE (Visible the retrace line on the back raster)


Check the G1 Waveform

Check the waveform at CN-K ⑦ pin on the CRT PWB (PWE-322B). The waveform should have horizontal frequency pulse and vertical frequency pulse.

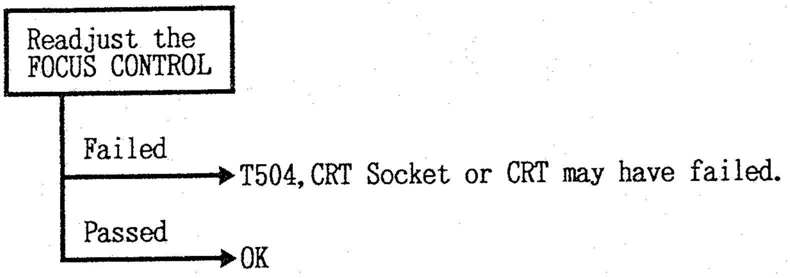
Passed

CRT may have failed.

Failed

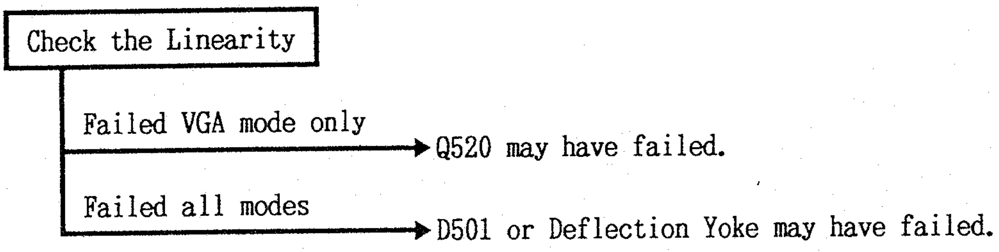
ZD402,D406,D407,D710,Q701,R760,D711,Q702,D712 or SG951 may have failed.

18. POOR FOCUS

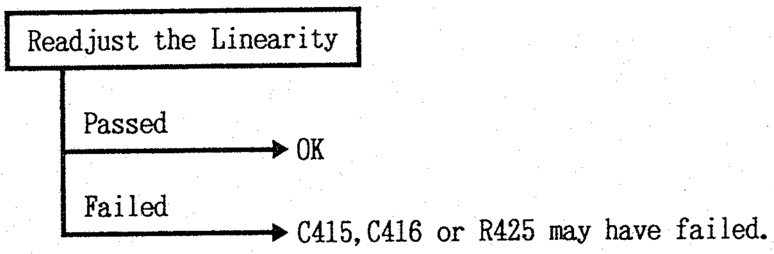

Readjust the FOCUS CONTROL
Failed
T504, CRT Socket or CRT may have failed.
Passed
OK

19. BAD LINEARITY

19.1 HORIZONTAL LINEARITY FAILURE


Check the Linearity
Failed VGA mode only
Q520 may have failed.
Failed all modes
D501 or Deflection Yoke may have failed.

19.2 VERTICAL LINEARITY FAILURE


Readjust the Linearity
Passed
OK
Failed
C415, C416 or R425 may have failed.

CIRCUIT DESCRIPTION

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1. I/F PWB

(1) Video Preamplifier

The analog video signals are received from the mini D-Sub Connector pin numbers 1, 2 and 3 (Red, Green and Blue respectively). The level of the video signals are controlled by VR701R, G and B (R, G and B Gain Controls) before they are applied to pins 4, 6 and 9 of the Preamplifier IC751. Pin 11 of IC751 supplies the bias current for each of the video inputs. The gain of IC751 is controlled by the DC level on pin 12. The JC-1521HMB/R and JC-1532VMA contrast controls adjust the DC level on pin 12. Pin 14 of IC751 is the input for the Clamp Pulse. The Clamp Pulse is obtained from the Horizontal Sync Pulse driven from IC801. Pins 16 (Blue), 20 (Green), and 25 (Red) are the output signals from IC751. Pins 17 (Blue), 21 (Green) and 26 (Red) are the control bias level output for the next stage. The next stage of the JC-1521HMB/R is the final amplifier on the CRT PWB. The JC-1532VMA has the buffer amplifier Q701R, G and B between IC751 and final amplifier.

(2) Contrast Control Circuit

This circuit has two functions. One is the processing of the user Contrast Control and the other is the ABL (Automatic Brightness Limiter) function. The ABL control signal is obtained from the FBT and is applied to the circuit through pin 1 of the CN-Z connector. Q781 is activated when the ABL control voltage drops below 12 volts. Once Q781 is activated, the collector of Q782 will decrease. The collector voltage of Q782 also shares the load resistor R786 with Q783. Q783 is the control transistor for the user Contrast Control.

(3) MultiSync Control Engine (Gate Array IC801)

IC801 is Cmos IC. It has the following functions:

A) Horizontal and Vertical positive polarity sync generator
B) Horizontal Sync frequency counter (8 bits)
C) Horizontal frequency band decoder
D) Vertical frequency band decoder
E) Graphics standards preset mode select signal generator
F) Composite Sync separator
G) Clamp pulse generator
H) Video signal generator for the Self Test mode

Pins 10 and 11 are the function selector for IC801. Both of these pins must be earthed for the JC-1521HMB/R and JC-1532VMA monitors.

Pin 3 is the horizontal or composite (H/V) sync input and pin 4 is the vertical Sync input for IC801. When there is no vertical Sync Preset on pin 4, the composite (H/V) Sync separator circuit will be activated within IC801. The output of IC801 is always a positive polarity signal for both horizontal Sync (output pin 36) and vertical Sync (output pin 14) when the inputs are either positive or negative.

The control clock for IC801 is a 10 MHz crystal number X801. The input horizontal Sync pulses are counted by this clock. The minimum resolution for dividing the signal is 125 Hz. The counter values are registered by each of the vertical Sync pulse. The 8 bit binary counter outputs are pins 25 through 32. The following is the order of the pins:

	pin 25	pin 26	pin 27	pin 28	pin 29	pin 30	pin 31	pin 32	
LSB	bit 0	bit 1	bit 2	bit 3	bit 4	bit 5	bit 6	bit 7	MSB

Pins 33 through 35 are the horizontal frequency band outputs. If the horizontal freuency is higher than 34.5 kHz then pin 33 will be high. If the horizontal frequency is more than 43 kHz then pin 35 will be high. The following explains these relationships (JC-1521HMB/R is not compatible with a horizontal frequency greater than 39 kHz):

	Fh<34 kHz	34 kHz<Fh<43 kHz	43 kHz<Fh
Pin 33	Low	High	High
Pin 35	Low	Low	High

Pins 12 and 13 are the vertical frequency band outputs. If the vertical frequency is between 63 Hz and 80 Hz the pin 12 will be high. If the vertical frequency is greater than 80 Hz then pin 13 will be high. The following table explains these relationships:

	Fv<63 Hz	63 Hz<Fv<80 Hz	80 Hz<Fv
Pin 12	Low	High	High
Pin 13	Low	Low	High

Pins 15 through 24 and pin 34 are the Mode select signal generator's output for the preset Graphics standards. The following table explains the mode for each pin:

Pin 15	VGA350	Pin 20	SVGA (72)	(JC-1532VMA only)
Pin 16	VGA400	Pin 21	8514/A&XGA	
Pin 17	VGA480	Pin 22	EVGA (72)	
Pin 18	SVGA (56)	Pin 23	1024×768 (60)	(JC-1532VMA only)
Pin 19	SVGA (60)	Pin 34	MacII (640×480)	

Pin 41 is the clamp pulse output. When separate horizontal and vertical Sync signals are applied to the monitor, the clamp pulse is basically the same as the horizontal Sync signal. When a composite (H/V) Sync signal is applied to the monitor, the output on pin 41 is a delayed horizontal Sync signal once it is separated from the vertical Sync signal.

Pin 3 is the Self Test input. Pin 3 will be high when pin 5 of the mini D-sub connector is not earthed. The output on pin 42 will be the Self Test video signal.

(4) Video Signal Generator for the Self Test mode

Q751, Q752 D701R, G and B comprise the Self Test mode video signal generator.

(5) Horizontal Oscillator's Tracking Circuit

R507 is a network ladder resistor. The 8 bit binary output of IC801 for the horizontal frequency is converted from digital to analog by this resistor network. VR501 (H HOLD) sets the low free running horizontal frequency (usually around 30 kHz). VR502 (H HOLD 2) sets the low to high free running horizontal frequency. IC501's op-amp and Q501 produce the constant current source for IC401. This constant current source with C509 and IC401 determine the free running oscillator frequency.

(6) Horizontal Phase Shift (H Position Control)

IC401 Pin 1 is the horizontal Sync input signal. IC401 has a built in monostable multivibrator used to shift the horizontal Sync pulse. IC501's op-amp and Q502 produce the constant current source. Along with C503 they are used to produce the time constant for shifting the Horizontal Sync pulse which is produced by the H Position VR from the CN-C.

(7) Horizontal Oscillation

The positive horizontal sync pulse is differentiated by C502 and R520 and input to IC401 pin 1.
The horizontal section of IC401 is composed of the phase shifter, the saw tooth generator, AFC and the horizontal OSC section.
The horizontal oscillation circuit is basically a CR OSC circuit generating a sawtooth wave by charging and discharging condenser C509 at IC401 pin 9. Then, the charging current is controlled by the H F/V output.
Therefore, the horizontal free-run frequency changes in proportion to the horizontal frequency and the signal pull in from 31 kHz to 39 kHz horizontal scan frequency range.

(8) V Size Switch

This circuit is composed of Q431 through Q438 transistors and resistors that is connected to each transistor. This circuit is working for vertical size switching on each mode.

2. CRT PWB

(1) Video Output Amplifier (R, G, B)

The video signals inputs to the cascade amplifier which consists of Q911 and 912 is amplified by a factor of about 17 and applied to the Video Output Buffer circuit. When the Clamp Pulse is applied to the base of Q911. Q911 is turned off. Therefore, the output signal's idling voltage is about 7 volts.
In case of JC—1532VMA, the Clamp Pulse is sent from Blanking circuit. And in case of JC-1521HMB/R, the Clamp Pulse is sent from MultiSync Control Engine.

(2) Video Bias Control

This is a DC biasing circuit. The peak voltage is added to the bias voltage level on CRT's cathode. Q921 acts as a constant current source. Q921's collector current is fed to the base of Q922. Q922 emitter is the Sub Bright VR control. Positive current flows into R936 causing Q932's collector voltage to decrease when Q922's emitter voltage increases. Q932's collector voltage flows into the base of Q931. Changes in this collector voltage (Q932) will cause an inverse voltage in Q931's base. That is, Q931's base voltage will increase if Q932's collector voltage decreases. Therefore, the peak signal voltage added to the cathode increases thereby lowering screen's brightness.

3. Main PWB

(1) H Drive Pulse Buffer

H Drive pulse supplied by I/F PWB is buffered by Q510 and Q511. It is then supplied to the Drive circuit of H Deflection circuit, Drive circuit of HV circuit, and Saw Tooth Generator of Chopper circuit.

(2) H Deflection Circuit

/Drive Circuit
The H drive pulse turns Q512 on and off. The synchronized drive pulse is generated on the second side of T501.

/Output Circuit
The drive pulse is applied to the base of Q516 turning it on and off. The saw tooth waveform deflection current is generated in the Deflection Yoke. This is the deflection current which sweeps the beam which in the horizontal direction. L502 and L503's induction is deflection current dependent and its current is controlled and corrected for peak performance regardless of the horizontal frequency (JC-1521HMB/R does use L503). C526, C528 and C529 (JC-1521HM only C526 and C529) corrects for the "S" characteristic and changes the parabolic wave generated at both of the condenser by the inflow current. C526 is used in all modes. When the horizontal frequency is less than 43 kHz, the correcting condenser C528 added (JC-1532VMA only). In VGA mode, the correcting condenser C529 added.

The pulse width is determined by the DY's induction, other inductor and the capacity of the resonance condensers and is generated at both end of C523 and C524. This pulse width is 4μS (JC-1521HMB) or 3.4μS (JC-1532VMA). Also, the power supply voltage varies depending upon frequency and screen size is controlled by High B+ Chopper voltage.

/H Centering Circuit
The voltage of about ±3 volts is compared to the power supply voltage of deflection circuit is generated by T503. This voltage is divided by R587, R588 and VR513 (H Centering) and then is applied to the base of Q544 and Q545. Q544 and Q545 work as a variable voltage source for L505. The deference voltage of the base and emitter is fed to L505. This current is added to the horizontal deflection circuit in order to manipulate the horizontal centering.

(3) High Voltage Circuit

/Drive Circuit

The H Drive pulse is inverted by Q546 and is applied to the base of Q547 and Q548 which comprise a push-pull circuit. This push-pull circuit acts as a current amplifier and its output is fed to the gate of Q549.

/Output Circuit

The pulse width of Q549's drain is determined by the first side of the FBT and the resonance condensers: C570, C572 and C573 (JC-1532VMA only). This pulse width is longer in duration than the collector pulse of the Horizontal Deflection circuit. Its duration is 10 μS in the VGA mode and 8 μS in the SVGA mdoe and 7 μS in the 48 kHz mode (JC-1532VMA only).

/High Voltage Generator and Stabilizer

The SR-Transformer is used to compensate the high voltage fluctuations of the JC-1521HMB/R and JC-1532VMA. The circuit description follows.

The high voltage fluctuations occur because of the Fly-back Transformer which is driven by Q549, changes by both the horizontal frequency and the beam current. The SR-Transformer is driven by Q552 and compensates for the decrease of the high voltage. The high voltage supplied to the CRT anode is the total amount of the FBT and the SR-Trans voltage.

The high voltage is divided by the FBT's internal high resistor and VR516 and R5C8 for the voltage change detection. IC504 is a variable shunt voltage regulator with a reference voltage of 2.5 Volts. The operation of this circuit can be compared to that of the operational amplifier shown in Figure 1. The voltage generated across VR516 and R5C8 is equal to 2.5 volts. Therefore, this is a negative feedback loop.

A 15 volt pulse is generated between pins 7 and 8 of the FBT and is biased by the voltage generated across R5D0. This pulse drives the gate electrode of Q552. When the potential deference of −15 volts is across R5D0, Q552's source is at 0 volts and Q552's gate is turned off. If the potential deference at Q552's gate and turns on Q552's drain. The variable voltage source comprised of the FBT and the SR-Trans is pulse width modulated. High voltage correction occurs by monitoring the FBT rise time and lengthening it by raising the bias voltage of R5D0.

The high voltage detection voltage decreases and becomes equal to IC504's reference voltage which is the high voltage correction due to the SR-Trans output. Therefore, the high voltage is compensated to keep via a feedback loop to maintain constant voltage.

SR = Stabilized Regulation

/High Voltage Protector

This unit has three detection circuits and two HV protection circuits. The first circuit detects when the high tension voltage on the FBT only becomes too high. The second circuit detects when the high tesnion voltage on the FBT and SR-Trans becomes too large. And the third circuit detects layer-short in either the FBT or SR-Trans.

HV Protector circuit 1 consists of Q2001 and Q2002. HV Protector circuit 2 consists of Q2003 and Q2004.

The first detect circuit sends the signal voltage to HV Protector circuit 1. This signal voltage is generated in the following manner. The voltage generated at pin 5 of the FBT is rectified by C578. C578's voltage is divided by R2010, R2011 and VR2001. This causes a signal voltage shift at D2001 and ZD2001. When the signal voltage is greater than 0.7 volts the HV Protector circuit is active. The high tension voltage is about 27 kV when the signal voltage is 0.7 volts.

The second detect circuit sends the signal voltage to HV Protector circuit 2. This signal voltage is generated in the following manner. The voltage generated at pin 6 of the FBT is rectified by C586. This voltage added to the voltage generated at pin 17 of SR-Trans and C589. Its voltage is divided by R2012, R2013 and VR2002. This causes a signal voltage shift at D2002 and ZD2002. When the signal voltage is greater than 0.7 volts then HV Protect circuit is activated. The high voltage is about 28 kV when the signal voltage is 0.7 volts. The third circuit detects leaks in the FBT and SR-Trans layers in the following manner. R5E1 is inserted in series within the input power supply line to the FBT and SR-Trans. When the voltage across R5E1 exceeds that of Q570's VBE, Q570 is turned on and the signal voltage is then sent to HV Protector circuit 2. This signal current is approximately 2.5 to 3 times the normal current. The HV Protector circuits each consist of two transistors. The bottom transistor will be turned on by the detect circuit signal voltage. The bottom side transistor will then turn on the top side transistor. When this detect signal is not present as a result of the HV Protector circuit, this circuit remains active until the power supply voltage drops. This is due to the fact that the bottom transistor is driven by the top transistor.
Finally, this protector circuit turns on after a time constant interval when the high voltage changes too quickly. For example, the protector circuit needs about two seconds to respond in the case of the leak of FBT.

(4) High B+ Chopper

/Saw Tooth Generator
Q521 works as a fixed current source and adds charging current to C536. The differentiated H drive pulse is applied to the base of Q522. Then C536 is discharged. A saw tooth waveform is then generated across C536.

/High B+ Chopper Controller
This circuit adjusts the rectangular wave output duty cycle by comparing the saw tooth wave with the feed back control voltage from the Side Pincushion Correction circuit, the Horizontal Size Correction circuit and the Defrection circuit. The duty cycle decrease when the control voltage increases.

/High B+ Chopper Output
The Chopper Control wave is added to the base of Q526 to turn it on and off. Therefore, Q525 is turned on and off as well. A 150 Vo-p rectangular wave is generated on Q526's output. This rectangular wave is rectified by C548 and L504. And the rectified voltage is added to the horizontal defrection circuit.

(5) Low B+ Chopper

/Low B+ Chopper Controller
The rectangular wave is made by comparing the control voltage from the voltage from ZD509 and the output of the saw tooth generator. The duty cycle is about 1:3.

/Low B+ Chopper Output
This circuit is truned on and off by the Low B+ Chopper controlled rectangular wave. The output is a rectangular wave of about 240 Vo-p. The heater voltage (6.3 volts) is generated from this wave at C556 and T503. Also, 12 volts are produced from the three terminal regulator whose input is T503's output (about 15 volts).

(6) H Size Control

The H Size user control DC voltage is amplified by IC505 and is added to the High B+ Chopper controller. When this voltage decreases the horizontal size increases. Q540 and Q541 are turned on and off by the output mode of the MultiSync Control Engine switching the control voltage.

(7) Side Pin Control

/Parabolic Wave Control

This circuit produces the control voltage sent to the Parabolic Wave Generator for constant pin cushion distortion independent of the vertical frequency and vertical size. IC404 and associated components correct the side pincushion distortion to the vertical size. Q420 and IC403 correct the vertical frequency.

/Parabolic Wave Generator

Q424 controls C424's charging current which act as a variable current source. Q420 discharges C424 and therfore a saw tooth wave is generated across C424. Peak value of this saw tooth wave is controlled by the Parabolic Wave Control circuit. Peak value of the pin cushion parabolic wave is changed by the peak value and frequency of the saw tooth wave. Because this parabolic wave is generated by the integration of this saw tooth wave, the peak value of the control voltage of the parabolic wave does not change into the frequency from the Parabolic Wave Control circuit.

(8) Vertical Output

Vertical Deflection

The I/F PWB generated vertical drive signal is applied to Q411. A saw tooth wave is generated across C418 by the combination of turning Q411 on and off with the current from IC401 pin 6. The saw tooth wave time constant is proportional to the current supplied by pin 6. This current is determined on that drawn from pin 4. Pin 4's current is determined by the Vertical Size control comprised of IC505 and Q410.

The saw tooth wave peak voltage value is proportional to the DY's peak current value.

At this time, vertical linearity is decoded mostly by C416, 415, R411, 422, 423, 424 and 425. And the linearity is not switch for vertical frequency and mode.

/Vertical Position Control

The user control Vertical Position DC voltage is applied to IC505 pin 12. It is controlled by R431. Vertical position is controlled through R431 in the Defrection Yoke.

(9) Blanking Circuit

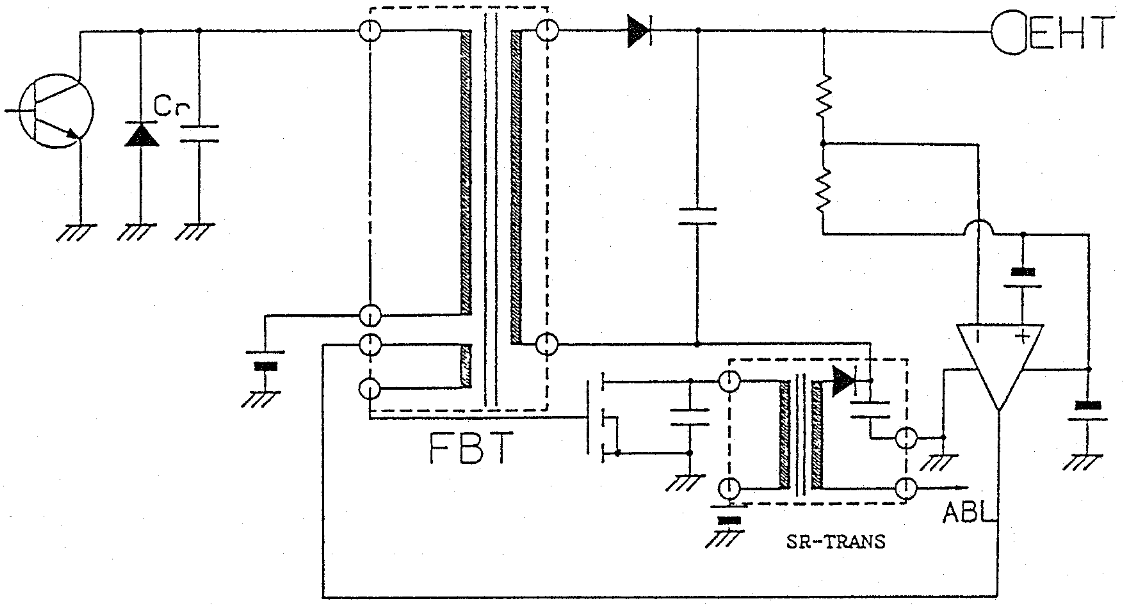
This circuit is triggered by a negative blanking pulse at G1 of the CRT. The vertical blanking pulse is gnerated by the vertical output IC from the vertical sync pulse and is divided by the resonance condenser in the horizontal defrection circuit. This blanking pulse is applied to G1 after waveform correction by Q701 and Q702

(10) Spot Killer

This circuit generates the spot brightness protection in the following manner.

The negative pulse generated from a quick voltage change in the 24 volt line is applied to G1.

When the 24 volt line voltage drops quickly, Q573's base voltage drops. But Q573's emitter has C5A0's charge and will not drop as a result. Therefore, Q573 turns on and the voltage is generated on the collector. Then Q574 turns on and the collector voltage of Q574 drops. This voltage is applied to G1 of the CRT through C5A1.

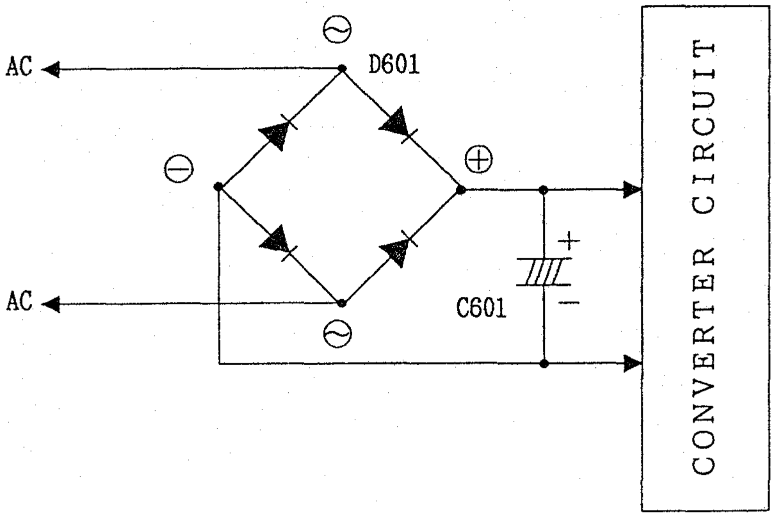

Cr
EHT
FBT
SR-TRANS
ABL
-
+

(Fig 1) SR F.B.T. CIRCUIT

4. Switching Regulator Unit

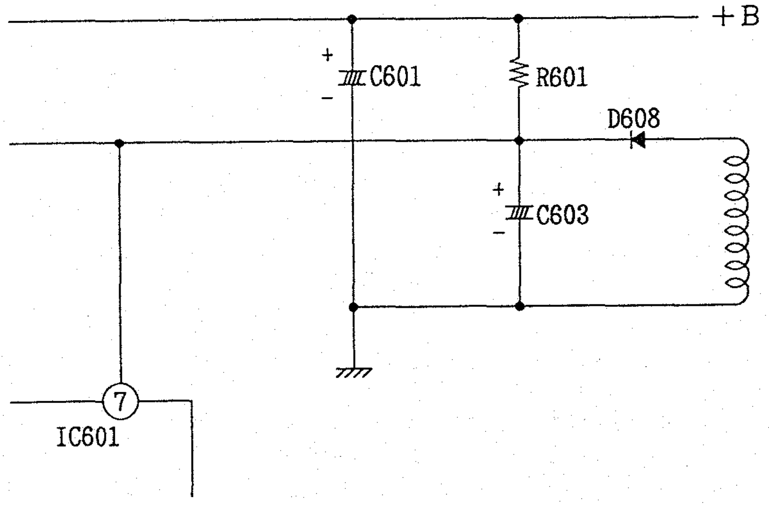
(1) Rectifying and Filtering Circuit

AC input is rectified by D601. Then, it is filtered by C601. The resulting DC voltage is supplied to the converter circuit.



(2) Auxiliary Power Supply Circuit

The auxiliary power circuit is needed to activate IC601. At the time when the power is turned on, the charging current flows into the condensers C603 via R601. Oscillation starts when the voltage of IC601 pin 7 reaches 16V by this charging operation.
After the start of oscillation, the flyback voltage of the auxiliary winding for the switching transformer is rectified and filtered by D608 and C603. The resulting DC voltage is supplied to IC601.

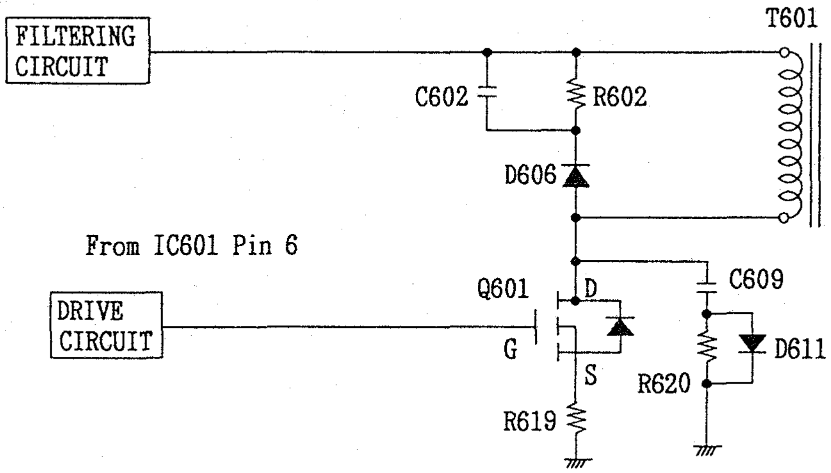


(Fig 3) Auxiliary Power Supply Circuit

(3) Converter Circuit

The converter circuit consists of the primary winding of the switching transformer T601, a switching device Q601, and surge absorbers (C602, R602, C609, R620, D606 and D611) that are connected to the primary winding.

The oscillating signal from IC601 pin 6 is applied to the gate of Q601 causing the drain-source to be turned OFF and ON so that the oscillating voltage is applied to the primary winding of T601.

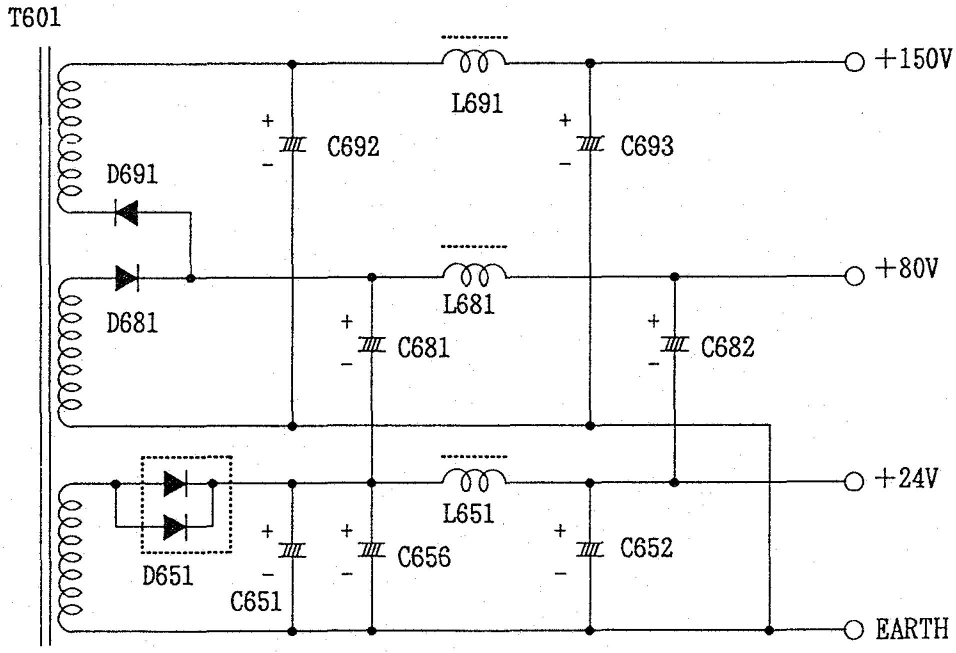

T601
FILTERING CIRCUIT
C602
R602
D606
From IC601 Pin 6
Q601
D
G
S
DRIVE CIRCUIT
C609
D611
R620
R619

(Fig 4) Converter Circuit

(4) Output Rectifying and Filtering Circuit

The fly back voltages generated at the secondary windings of the switching transformer T601 are rectified by D651, D681 and D691. Then, these voltages are filtered by C692, C693, C651, C652, C656, C681 and C682 so that rectified DC voltages are obtained.

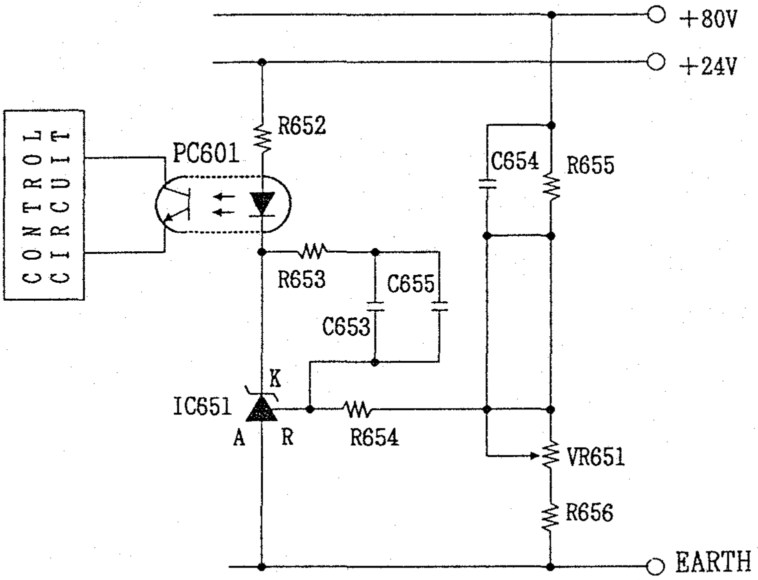
Constant flyback voltages are maintained by controlling the duty cycle of Q601 in the converter circuit.


T601
L691
+150V
C692
C693
D691
L681
+80V
D681
C681
C682
L651
+24V
D651
C651
C656
C652
EARTH

(Fig 5) Outputs Rectifying and Filtering Circuit

(5) Error Detection Amplifier Circuit

The output voltage 80V is divided by the network resistors. This divided voltage is compared to the reference voltage at the error amplifier IC651. An error signal is applied to the control circuit via the photocoupler PC601.


+80V
+24V
CONTROL CIRCUIT
PC601
R652
C654
R655
R653
C655
C653
K
IC651
A
R
R654
VR651
R656
EARTH

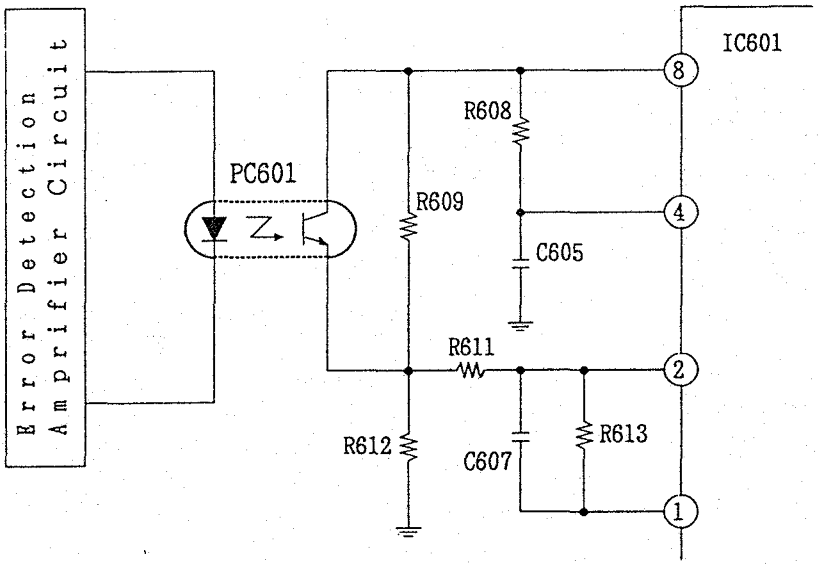
(Fig 6) Error Detection Amplifier Circuit

(6) Oscillating and Control Circuit

The oscillating and control circuits are contained in IC601.

IC601 has a built-in oscillator whose frequency is determined by R608 and C605 connected to pin 4 and pin 8 respectively.

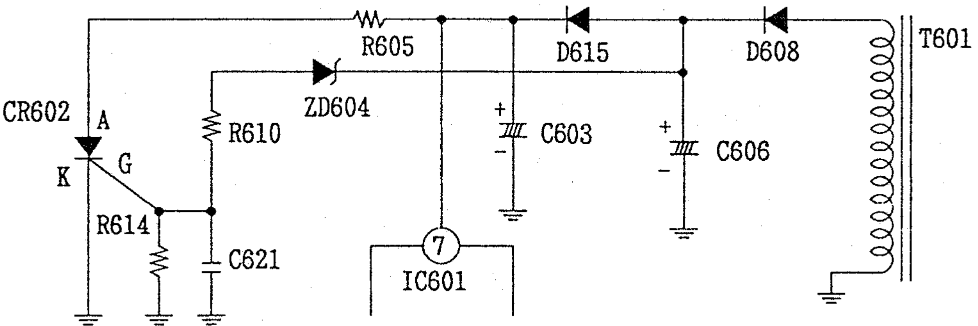
The output of the error detection amplifier circuit is fed back to the control circuit pin 2 from pin 8 via PC601 to control the duty cycle of Q601 so that output voltages are kept constant.


Error Detection Amprifier Circuit
IC601
8
R608
PC601
R609
4
C605
R611
2
R612
C607
R613
1

(Fig 7) Oscillating and Control Circuit

(7) Overvoltage Protection

If a failure occurs and the output voltage on the secondary winding rises, the voltage of the auxiliary winding will rise proportionally. When the auxiliary winding's voltage rises beyond the zener voltage of ZD604, CR602 will turn ON. This in turn will decrease the voltage at pin 7 of IC601 causing the oscillator within IC601 to stop.



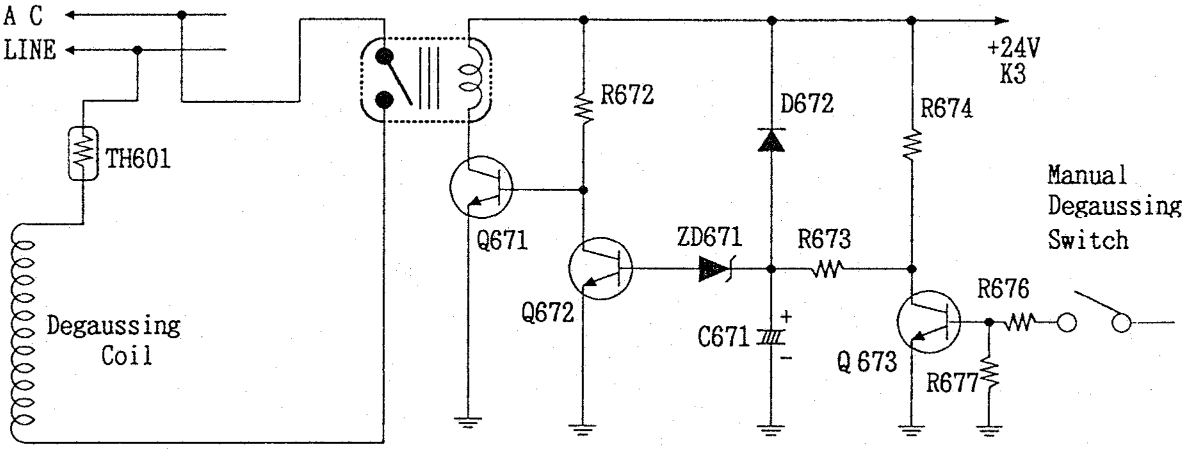
R605
D615
D608
T601
CR602
A
K
G
ZD604
R610
C603
C606
R614
C621
7
IC601

(Fig 8) Over Voltage Protection

(8) Auto and Manual Degaussing Circuit

1) Auto Degaussing Circuit
When the unit is turned ON. The +24V D C output at K3 rises. This will cause Q671 to turn ON. The ON period for this transistor is determined by R673, ZD671, R674, and C671 (approx. 2 seconds). When Q671 is ON, current will flow through the Degaussing Coil

2) Manual Degaussing Circuit
When the Degauss Switch is turned ON, Q673 conducts thereby discharging C671. When C671 is discharged, Q671 will turn on again.



A C
LINE
TH601
Degaussing
Coil
R672
D672
R674
+24V
K3
Q671
Manual
Degaussing
Switch
ZD671
R673
R676
Q672
C671
Q 673
R677

(Fig 9) Auto and Manual Degaussing Circuit

REPLACEMENT PARTS LIST

The components specified for Model JC-1521HMB(N).

Notes:
1. The components identified by ⚠ mark are critical for safety. Replace only with parts Number specified.
2. Parts identified with＊＊are British made parts.

SYMBOL	PARTS NO	DESCRIPTION
*** CRT & TUNER ***		
⚠CRT	33015519	CRT M36KME23XX23(T3)
*** ICS ***		
⚠IC504	370A1009	IC UPC1093J-T (REG)
IC502	37005182	IC LM7812CT(REG)
IC752	37011018	IC UPC311C (COMP)
IC403 IC404 IC501	37011210	IC XRA10324 (Q OP-AMP)
IC505 IC506		
⚠IC401	37056494	IC LA7853
IC402	37056689	IC LA7837
IC751	37056846	IC LM1203N
IC801	37056853	MOS PCZ80-145
IC503	37101543	IC XRA10339
*** TRANSISTORS ***		
Q413	350A1117	TR 2SA1515-T Q
Q545	350C1218	TR 2SB1329-T105 R
⚠Q2002 ⚠Q2004 Q410	350E3218	TR 2SC1740S-T R
Q421 Q502 Q510		
Q523 Q543 Q546		
Q547 Q701 Q702		
Q703 Q782 Q783		
Q922		
Q544	350G1018	TR 2SD2005-T105 R
Q423 Q574 Q932B	350H4417	TR,2SC1473-TA Q
Q932G Q932R		
Q911B Q911G Q911R	350H5017	TR,2SC3811-TA Q
Q412	350J2717	TR 2SC3377-T Q
Q424 ⚠Q570 Q931B	350K5217	TR,2SA1018-TA Q
Q931G Q931R		
⚠Q2001 ⚠Q2003 Q501	350K5718	TR 2SA933S-T R
Q511 Q521 Q524		
Q548 Q573 Q752		
Q781 Q901 Q921		
Q913B Q913G Q913R	35006804	TR,2SA1538-RA D
Q526	35056312	TR 2SC2688 L
⚠Q516	35082401	TR 2SC3486-YB
Q912B Q912G Q912R	35086004	TR,2SC3953-RA D
Q914B Q914G Q914R		
Q403 Q404	351G0556	TR DTA114WS-T
Q405	351G0560	TR DTA144WS-T
Q411 Q420 Q522	351G0601	TR DTC114ES-T
Q540 Q541 Q751		
Q401 Q402 Q431	351G0602	TR DTC144ES-T
Q432 Q433 Q434		
Q435 Q437 Q438		
Q580		
Q512	35121900	TR 2SK752
Q520 Q542	35122100	TR 2SK703
⚠Q551	35122200	TR 2SK854
Q525	35122500	TR 2SK758
⚠Q552	35123000	TR 2SK949
⚠Q549	35124100	TR 2SK1217

SYMBOL	PARTS NO	DESCRIPTION
*** DIODES ***		
ZD751	360A0034	DIODE MTZJ5.1A T-72
ZD510	360A0035	DIODE MTZJ5.1B T-72
ZD401	360A0038	DIODE MTZJ5.6A T-72
⚠ZD508	360A0043	DIODE MTZJ6.2B T-72
ZD561 ZD564	360A0059	DIODE MTZJ9.1B T-72
⚠D2003 ⚠D2004 D2005	360K1027	DI 1SS132 AT52
D406 D407 D410		
D411 D412 D413		
D414 D415 D416		
D509 D510 D511		
D512 D513 D514		
D515 D516 D517		
D518 D529 D530		
D531A D531B D531C		
D532 D533 D535		
D536 D538 D54A		
⚠D546 D548 D550		
D561 D562 D563		
D701B D701G D701R		
D710 D711 D781		
D801 D802 D803		
D804 D805 D806		
D807 D808 D809		
D810 D811 D812		
D813 D814 D815		
D816 D817 D911B	360K1027	DI 1SS132 AT52
D911G D911R D912B		
D912G D912R D913B		
D913G D913R D962		
⚠D523 ⚠D528 D549	360K1032	DIODE 1SS82-TA
D712 D713 D931B		
D931G D931R D961		
⚠ZD2001 ⚠ZD2002	360K3143	DIODE,RD8.2JSB(1)-T4
ZD861	360K3157	DIODE RD5.1EB(3)-T4
ZD501	360K3410	DIODE RD8.2JSB(2)/JSAB(2)
ZD2003	360K3605	DIODE RD2.2ESB(1)-T4
ZD506	360K3624	DIODE RD3.9ESB(2)-T4
ZD509	360K3643	DIODE RD6.2ESB(2)-T4
ZD961	360K3647	DIODE RD6.8ESB(2)-T4
ZD520	360K3655	DIODE RD8.2ESB(2)/ESAB(2)
ZD502	360K3671	DIODE RD12ESB(2)/ESAB(2)
ZD503 ZD504 ZD505	360K3677	DIODE RD15ESB-T4
ZD507	360K3679	DIODE RD15ESB(2)-T4
ZD402	360K3692	DIODE RD20ESB(3)-T4
ZD562	360K3792	DIODE MTZ 3.9B T-72
ZD563	360K3823	DIODE MTZ 8.2BT-72
D405 D504 D506	361K7160	DIODE TVR-06G G23
D508 D521 D522		
D527 ⚠D541 ⚠D542		
D543 ⚠D544 ⚠D547		
D520	361K7562	DIODE EGP10G G23
D519	36107293	DIODE RK14
D507	36107518	DIODE RG2
⚠D501	36107530	DIODE RS4FS

SYMBOL	PARTS NO	DESCRIPTION
⚠D540	36107560	DIODE RG2A2
D001 D002	36801331	LED SLR-54MT3F/PQ
⚠D2001 ⚠D2002	38005054	VARISTOR MA29W-A
*** TRANSFORMERS ***		
T501	45803010	TRANS,H.DRIVE
T503	46304107	TRANS,CONVERTER
⚠T504	47105671	F.B.T (SR)
⚠T502	47710013	TRANS,H-OUT
*** VARIABLE RESISTORS ***		
VR701B VR701G VR701R	410G1151	R,VARIABLE B100H
VR410 VR513	410G1155	R,VARIABLE B470H
VR781	410G1157	R,VARIABLE B1.0K
VR502	410G1159	R,VARIABLE B2.2K
VR411 VR921	410G1161	R,VARIABLE B4.7K
VR420 VR501	410G1163	R,VARIABLE B10K
VR401	410G1165	R,VARIABLE B22K
VR931B VR931G VR931R	410G1166	R,VARIABLE B33K
VR531 VR532 VR533	410G1167	R,VARIABLE B47K
VR535 VR536 VR538		
VR932B VR932G		
VR001 VR002	41011106	R,VARIABLE B10K-V
VR004	41011303	R,VARIABLE B20K-V
VR005	41011310	R,VARIABLE B10K-V
VR006	41011312	R,VARIABLE B500
VR003	41011313	R,VARIABLE B50
VR007	41011314	R,VARIAVLE
VR511	41085009	R,VARIABLE B10K
VR510	41085012	R,VARIABLE B50K
⚠VR2001 ⚠VR2002	41505005	R,VARIABLE B2K
⚠VR516	41505009	R,VARIABLE B20K
*** RELAYS & SWITCHES ***		
SW001	653F0031	SWITCH,PUSH BUTTON
	65360027	SWTCH,PUSH BUTTON
*** COILS & FILTERS ***		
LC701B LC701G LC701R	390J9014	FILTER ZJSC-R33-390TA
R507	39030239	R,NETWORK
⚠L502	60919117	COIL,H.LIN
L504	60999004	COIL,CHOKE
L911B L911R	610E1706	COIL,FILTER 1.2UH
L911G	610E1708	COIL,FILTER 1.8UH
L912G	610E1711	COIL,FILTER 3.3UH
L912B L912R	610E1712	COIL,FILTER 3.9UH
L507	610F3025	COIL,FILTER 47UH
L501	610F7010	COIL,FILTER 2.7UH
L761	610F7025	COIL,FILTER 47UH
L931B L931R	610F8005	COIL,FILTER 1.0UH
L931G	610F8037	COIL,FILTER 0.56UH
	**61062076	POWER LINE FILTER
L506	61064006	COIL,FILTER 50UH
L505	61070127	FILTER CHOKC

SYMBOL	PARTS NO	DESCRIPTION
L509	61070181	COIL,CHOKE PJ87-102K
	61315203	COIL,DEGAUSSING
LC961	616J9003	NOISE FILTER ZJSC-2R2-101
LC501 L508	616K5101	INDUCTOR,BEADS
LC911B LC911G LC911R	616K6027	NOISE FILTER 2A222-TA
LC861 LC862 LC962	616K6028	NOISE FILTER 1H223X-TA
LC963	616K6029	NOISE FILTER
LC401	616K6718	NOISE FILTER
*** PWB ASSYS ***		
	84N59CH3	PACKING, SUB PWB ASSY
	84N59DH4	PACKING, MAIN PWB ASSY
*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***		
SW-PS	**31104020	SW.REG.UNIT (SMP-120BB-1)
HS402	31709202	SHEET,INSULATOR
HS516 HS549	31709503	SHEET,INSULATOR
SG931B SG931G SG931R	32990047	ARRESTER
SG951		
X801	64098039	X'TAL(10.000MHZ)
SG952	66706002	SPARK GAP 1.5KV
⚠CN-CRT	70032055	CRT SOCKET(HPS0199)
CORD	70800066	LINE CORD E-3 #8011
CABLE	**73893101	CABLE SIGNAL MD15P-11P-BK
VR2001 VR2002 VR516	74004891	CAP
*** APPEARANCE PARTS ***		
	**25313791	CABINET BACK ASSY
	**25313821	CABINET BOTTOM
	**25314111	CABINET FRONT ASSY
	**25419001	REVOLVING STAND ASSY
	**25419021	REVOLVING SPINDLE
	25419841	LID,CONTROL ASSY
	25534631	COIL SPRING
	25607291	SLIDE SHEET
	**25757643	LABEL(REV.)
	**25775942	NAME PLATE,INSTRUCTION
*** KNOBS & PUSH BUTTONS ***		
	25454671	PUSH BUTTON (SW)
	**25454681	KNOB CONTROL
*** PRINTED & PACKING MATERIALS ***		
	**24813191	BAG,POLYETHYLENE(150*370)
	**25823181	FILLER (T) CARTON
	**25823192	FILLER (B) CARTON
	**25823751	CARTON BOX (JC-1521HMB)
	**25825621	SHEET, PROTECTION
	**78034408	MONITOR SALES OFFICE LIST
	**78125683	USER'S MANUAL JC-1521HMB
	599910331	S/M JC-1521HMB/B(EE)/R(N),(H)

SYMBOL	PARTS NO	DESCRIPTION
*** RESISTORS ***		
R001	401C6665	R,CARBON 470H 5% 1/4W
⚠R5D6	401C6673	R,CARBON 1.0K 5% 1/4W
R5B0	401C6685	R,CARBON 3.3K 5% 1/4W
R571	401H5601	R,CARBON 1.0H 5% 1/2W
R570	401H5603	R,CARBON 1.2H 5% 1/2W
R5C2	401H5617	R,CARBON 4.7H 5% 1/2W
R937B R937G R937R	401H5641	R,CARBON 47H 5% 1/2W
R913B R913G R913R	401H5643	R,CARBON 56H 5% 1/2W
R914B R914G R914R	401H5645	R,CARBON 68H 5% 1/2W
R951	401H5649	R,CARBON 100H 5% 1/2W
R429	401H5659	R,CARBON 270H 5% 1/2W
R961	401H5661	R,CARBON 330H 5% 1/2W
R759	401H5669	R,CARBON 680H 5% 1/2W
R553	401H5681	R,CARBON 2.2K 5% 1/2W
R952	401H5689	R,CARBON 4.7K 5% 1/2W
R5D7	401J9820	RD16Z,0H,AT52
R702B R702G R702R	401K5641	R,CARBON 47H 5% 1/6W
R5B7 R5B8 R912B	401K5647	R,CARBON 82H 5% 1/6W
R912G R912R		
⚠R2003 ⚠R2007 R5C4	401K5649	R,CARBON 100H 5% 1/6W
R529 R576 R704B		
R704G R704R R708B	401K5649	R,CARBON 100H 5% 1/6W
R708G R708R R788		
R911B R911G R911R		
R701B R701G R701R	401K5653	R,CARBON 150H 5% 1/6W
R403 R404 R405	401K5657	R,CARBON 220H 5% 1/6W
R50A R504 R757		
R804 R805 R806		
R807 R808 R810		
R811 R813		
R447 R801 R925	401K5661	R,CARBON 330H 5% 1/6W
R707B R707G R707R	401K5663	R,CARBON 390H 5% 1/6W
R938G		
R442 R497 R706B	401K5665	R,CARBON 470H 5% 1/6W
R706G R706R		
R752	401K5667	R,CARBON 560H 5% 1/6W
R915B R915G	401K5671	R,CARBON 820H 5% 1/6W
R407 R415 R416	401K5673	R,CARBON 1.0K 5% 1/6W
R434 R448 R5D9		
R5E9 R5F4 R5F8		
R526 R533 R536		
R538 R550 R552		
R705B R705G R705R		
R756 R781 R785		
R792 R901 R924		
R432 R436 R438	401K5675	R,CARBON 1.2K 5% 1/6W
R427 R433 R441	401K5677	R,CARBON 1.5K 5% 1/6W
R780		
R53B R915R R938B	401K5679	R,CARBON 1.8K 5% 1/6W
R2014 R401 R5F0	401K5681	R,CARBON 2.2K 5% 1/6W
R784 R926 R938R		
R406 R443 R535	401K5683	R,CARBON 2.7K 5% 1/6W
R786		
⚠R2011 ⚠R2013 R5A3	401K5685	R,CARBON 3.3K 5% 1/6W
R921 R923 R927		
R587 R731 R755	401K5687	R,CARBON 3.9K 5% 1/6W
R922		

SYMBOL	PARTS NO	DESCRIPTION
R437 R522 R532	401K5689	R,CARBON 4.7K 5% 1/6W
R736 R928		
R5A8 R5D4 R5EA	401K5691	R,CARBON 5.6K 5% 1/6W
R580 R782		
R5F3 R591 R732	401K5693	R,CARBON 6.8K 5% 1/6W
R783	401K5693	R,CARBON 6.8K 5% 1/6W
⚠R2010 ⚠R2012 R524	401K5695	R,CARBON 8.2K 5% 1/6W
R585 R787 R903		
⚠R2004 ⚠R2008 R402	401K5697	R,CARBON 10K 5% 1/6W
R412 R445 R5A0		
R5A2 R5A6 R5A9		
⚠R5CA R5C0 ⚠R5E0		
⚠R5E3 R5E6 R5E7		
R5H0 R5H1 R502		
R503 R506 R51A		
R530 R578 R583		
R593 R598 R703B		
R703G R703R R734		
R754 R802 R803		
R002 ⚠R2002 ⚠R2006	401K5699	R,CARBON 12K 5% 1/6W
R518 R521 R531		
R421 R43A R47A	401K5701	R,CARBON 15K 5% 1/6W
R5A7 R581 R592		
R751 R935B R935G	401K5703	R,CARBON 18K 5% 1/6W
R935R		
R423 R5B6 R520	401K5705	R,CARBON 22K 5% 1/6W
R523 R542 R545		
R55A R584		
⚠R2001 ⚠R2005 R546	401K5707	R,CARBON 27K 5% 1/6W
R411 R424 R493	401K5709	R,CARBON 33K 5% 1/6W
R5CB R525 R586		
R735 R789 R934B		
R934G R934R		
R5B1 R5B2 ⚠R5C8	401K5711	R,CARBON 39K 5% 1/6W
R422 R435 R494	401K5713	R,CARBON 47K 5% 1/6W
R495 R5E8 R53A		
R543 R544 R594		
R595 R597		
R547	401K5715	R,CARBON 56K 5% 1/6W
R936G	401K5717	R,CARBON 68K 5% 1/6W
R936B	401K5719	R,CARBON 82K 5% 1/6W
R492 R499 R5E5	401K5721	R,CARBON 100K 5% 1/6W
R5F5 R548 R596		
R5F2	401K5723	R,CARBON 120K 5% 1/6W
R933B R933G R933R	401K5727	R,CARBON 180K 5% 1/6W
R931B R931G R931R	401K5729	R,CARBON 220K 5% 1/6W
⚠R5E4 R932B R932G	401K5731	R,CARBON 270K 5% 1/6W
R932R		
R582	401K5737	R,CARBON 470K 5% 1/6W
R472 R491	401K5739	R,CARBON 560K 5% 1/6W
R498	401K5743	R,CARBON 820K 5% 1/6W
R480 R5A4 R5B5	401K5745	R,CARBON 1.0M 5% 1/6W
⚠R5H2 R733 R814		
R540	40107197	R,CARBON 10K 5% 1/6W
⚠R917B ⚠R917G ⚠R917R	40177133	R,CARBON 22H 5% 1/4W
⚠R918B ⚠R918G ⚠R918R		
R562	403F1161	R,METAL 330H 5% 1W
R588	403F1175	R,METAL OXIDE 1.2K 5% 1W

SYMBOL	PARTS NO	DESCRIPTION
R425	403F2103	R,METAL OXIDE 1.2H 5% 2W
R589	403F2133	R,METAL OXIDE 22H 5% 2W
⚠R572 R861	403F2141	R,METAL OXIDE 47H 5% 2W
⚠R5D0	403F2163	R,METAL OXIDE 390H 5% 2W
R431	403F3147	R,METAL OXIDE 82H 5% 3W
R557	403F3169	R,METAL OXIDE 680H 5% 3W
R558	403F3171	R,METAL OXIDE 820H 5% 3W
R916B R916G	40318273	R,METAL 1.0K 5% 7W
R916R	40318998	R,METAL 1.0K 5% 7W
R561	40371167	R,METAL 560H 5% 1W
⚠R5E1	40372109	R,METAL 2.2H 5% 2W
R513	404C1681	R,METAL 2.2K 1% 1/6W
R514	404C1683	R,METAL 2.7K 1% 1/6W
R510	404C1687	R,METAL 3.9K 1% 1/6W
R539	404C1695	R,METAL 8.2K 1% 1/6W
R511 R753 R790	404C1697	R,METAL 10K 1% 1/6W
R457	404C1700	R,METAL 13K 1% 1/6W
R439 R473 R483	404C1701	R,METAL 15K 1% 1/6W
R487 R512 R527		
R451 R484 R528	404C1702	R,METAL 16K 1% 1/6W
R410 R476	404C1703	R,METAL 18K 1% 1/6W
R409	404C1704	R,METAL 20K 1% 1/6W
R420 R471 R479	404C1707	R,METAL 27K 1% 1/6W
R452 R454	404C1709	R,METAL 33K 1% 1/6W
R496	404C1711	R,METAL 39K 1% 1/6W
R408 R458	404C1714	R,METAL 51K 1% 1/6W
R791	404C1715	R,METAL 56K 1% 1/6W
R477 R478	404C1717	R,METAL 68K 1% 1/6W
R474 R475	404C1718	R,METAL 75K 1% 1/6W
R936R	404C1720	R,METAL 91K 1% 1/6W
R482	404C1721	R,METAL 100K 1% 1/6W
R453	404C1723	R,METAL 120K 1% 1/6W
R515 R517	404C1725	R,METAL 150K 1% 1/6W
R486	404C1726	R,METAL 160K 1% 1/6W
R455 R470 R516	404C1727	R,METAL 180K 1% 1/6W
R5D2	404C1731	R,METAL 270K 1% 1/6W
R481 R485 R490	404C1733	R,METAL 330K 1% 1/6W
R519		
R509	404C1739	R,METAL 560K 1% 1/6W
⚠R5C5 ⚠R5C6 ⚠R5C7	404K5109	R,METAL 2.2H 5% 1/4W
⚠R430	404K5117	R,METAL 4.7H 5% 1/4W
⚠R5C1 ⚠R551	404K5133	R,METAL 22H 5% 1/4W
⚠R760	404K5149	R,METAL 100H 5% 1/4W
⚠R465A	404K5345	R,METAL 1.0H 5% 1/4W
⚠R5D1	40405109	R,METAL 2.2H 5% 1/4W
⚠R5B9	40406101	R,METAL 1.0H 5% 1/2W
⚠R461 ⚠R590	409A6125	R,FUSE 10H 5% 1/4W

*** CAPACITORS ***

C520 C541	420C9560	C,CERAMIC 500V 560PF
C557 C931B C931G	420C9563	C,CERAMIC 500V 1000PF
C931R		
C5A2 ⚠C525	420C9565	C,CERAMIC 500V 1500PF
C932B C932G C932R	420C9567	C,CERAMIC 500V 2200PF
C962		

SYMBOL	PARTS NO	DESCRIPTION
C559 C914B C914G	420C9569	C,CERAMIC 50V 3300PF
C914R		
C951	420DK108	C,CERAMIC 2KV 10000PF
C431 C5B0 C5B1	421A0425	C,CERAMIC 50V 0.01UF
C5B3 C5B4 C530		
C763		
C401	421C0208	C,CERAMIC 50V 390PF
C916B C916G C916R	421C0209	C,CERAMIC 50V 470PF
C5C2	421C0210	C,CERAMIC 50V 560PF
C551 C757 C804	421C0213	C,CERAMIC 50V 1000PF
C462 C512 C549	421D6009	C,CERAMIC 25V 0.1UF
C564 C702B C702G		
C702R C752 C753		
C754 C762 C766	421D6009	C,CERAMIC 25V 0.1UF
C767 C768 C784		
C803 C861 C863		
C864 C865 C901		
C911B C911G C911R		
C921 C964 C965		
C423 C562 C782	421D6013	C,CERAMIC 50V 0.1UF
C783		
C703B C703G C703R	423A1033	C,CERAMIC 50V 33PF
C413	423A1053	C,CERAMIC 50V 220PF
C801 C802	423A2025	C,CERAMIC 50V 15PF
C732 C756	423A2031	C,CERAMIC 50V 27PF
C537	423A2037	C,CERAMIC 50V 47PF
C502 C912B C912G	423A2045	C,CERAMIC 50V 100PF
C912R		
C504	423A2105	C,CERAMIC 50V 270PF
C505	427F4607	C,FILM 50V 3300PF
C507 C540	427F4613	C,FILM 50V 0.01UF
C404	427F4615	C,FILM 50V 0.015UF
C410A	427F4617	C,FILM 50V 0.022UF
C422 C425 C434	427F4625	C,FILM 50V 0.1UF
C424	427F4629	C,FILM 50V 0.22UF
C503	427F4647	C,FILM 50V 470PF
C534 C535 C546	427F4651	C,FILM 50V 1000PF
C533	427F4655	C,FILM 50V 2200PF
C513 C536 C552	427F4663	C,FILM 50V 0.01UF
C755	427F4669	C,FILM 50V 0.033UF
⚠C583	427F4673	C,FILM 50V 0.068UF
C592	427F4675	C,FILM 50V 0.1UF
C509	427F8404	C,FILM 100V 1800PF
C532	42703663	C,FILM 400V 0.01UF
⚠C572	42703865	C,FILM 400V 0.015UF
C731	4276D213	C,MYLAR 200V 0.01UF
C415	428B3024	C,METAL FILM 50V 0.82UF
C403 C410	428B3025	C,METAL FILM 50V 1.0UF
⚠C570	42807514	C,FILM 1.6KV 3600PF
⚠C523	42808075	C,FILM 1.6KV 5200PF
⚠C571	42808589	C,METAL FILM 1.6KV 7400PF
⚠C526	42839614	C,METAL 400V 0.62UF
⚠C529	42839655	C,METAL 200V 0.22UF
C915B C915G C915R	42840097	C,FILM 250V 0.22UF
⚠C524	42899914	C,METAL FILM 400V 0.18UF

SYMBOL	PARTS NO	DESCRIPTION
C416	430BF047	C,ELEC 25V 2200UF
C913B C913G C913R	430B3182	C,ELEC 160V 1.0UF
C5C0 C5C1	430B6017	C,ELEC 10V 220UF
C862 C902	430B6029	C,ELEC 16V 100UF
C566	430B6032	C,ELEC 16V 470UF
C5A0 C765	430B6053	C,ELEC 35V 47UF
C417	430B6054	C,ELEC 35V 100UF
⚠C585	430B6055	C,ELEC 35V 220UF
C555	430B6057	C,ELEC 35V 470UF
C420 C432 C510 C511 C550	430B6061	C,ELEC 50V 1.0UF
C421 C5C3	430B6064	C,ELEC 50V 4.7UF
C5A6 C542 C543 C544 C545 ⚠C581 ⚠C593	430B6065	C,ELEC 50V 10UF
C538 ⚠C578 ⚠C586 ⚠C589	430B6068	C,ELEC 50V 47UF
C441 C558	430B6512	C,ELEC 160V 1.0UF
C5A1 C568 C966	430B6556	C,ELEC 250V 10UF
C576	430B8177	C,ELEC 50V 3.3UF
⚠C579	430B9016	C,ELEC 10V 100UF
⚠C2001	430B9017	C,ELEC 10V 220UF
⚠C2002	430B9019	C,ELEC 10V 470UF
C701B C701G C701R C751	430B9025	C,ELEC 16V 10UF
C567	430B9029	C,ELEC 16V 100UF
C461 C522	430B9030	C,ELEC 16V 220UF
C563 C761	430B9032	C,ELEC 16V 470UF
C465	430B9033	C,ELEC 16V 1000UF
C961 C963	430B9041	C,ELEC 25V 47UF
C561	430B9042	C,ELEC 25V 100UF
C553	430B9043	C,ELEC 25V 220UF
C411 C412	430B9054	C,ELEC 35V 100UF
C506 C508	430B9061	C,ELEC 50V 1.0UF
C419	430B9062	C,ELEC 50V 2.2UF
C426	430B9066	C,ELEC 50V 22UF
C402	430B9221	C,ELEC 50V 0.1UF
C548	430B9536	C,ELEC 200V 10UF
C565	430B9556	C,ELEC 250V 10UF
⚠C580	4309H060	C,ELEC 250V 3.3UF
⚠C582	433A3033	C,ELEC 25V 10UF
C427	433A3043	C,ELEC 35V 4.7UF
C781	433J9021	C,ELEC 25V 10UF
C501	4339J021	C,ELEC 25V 10UF

REPLACEMENT PARTS LIST

The components specified for Model JC-1521HMB(H).

Notes: 1. The components identified by ⚠ mark are critical for safety.
Replace only with parts Number specified.
2. Parts identified with**are British made parts.

SYMBOL	PARTS NO	DESCRIPTION
*** CRT & TUNER ***		
⚠CRT	33015508	CRT M36KLH680X83
*** ICS ***		
⚠IC504	370A1009	IC UPC1093J-T (REG)
IC502	37005182	IC LM7812CT(REG)
IC752	37011018	IC UPC311C (COMP)
IC403 IC404 IC501	37011210	IC XRA10324 (Q OP-AMP)
IC505 IC506		
⚠IC401	37056494	IC LA7853
IC402	37056689	IC LA7837
IC751	37056846	IC LM1203N
IC801	37056853	MOS PCZ80-145
IC503	37101543	IC XRA10339
*** TRANSISTORS ***		
Q413	350A1117	TR 2SA1515-T Q
Q545	350C1218	TR 2SB1329-T105 R
⚠Q2002 ⚠Q2004 Q410	350E3218	TR 2SC1740S-T R
Q421 Q502 Q510		
Q523 Q543 Q546		
Q547 Q701 Q702		
Q703 Q782 Q783		
Q922		
Q544	350G1018	TR 2SD2005-T105 R
Q423 Q574 Q932B	350H4417	TR,2SC1473-TA Q
Q932G Q932R		
Q911B Q911G Q911R	350H5017	TR,2SC3811-TA Q
Q412	350J2717	TR 2SC3377-T Q
Q424 ⚠Q570 Q931B	350K5217	TR,2SA1018-TA Q
Q931G Q931R		
⚠Q2001 ⚠Q2003 Q501	350K5718	TR 2SA933S-T R
Q511 Q521 Q524		
Q548 Q573 Q752		
Q781 Q901 Q921		
Q913B Q913G Q913R	35006804	TR,2SA1538-RA D
Q526	35056312	TR 2SC2688 L
⚠Q516	35082401	TR 2SC3486-YB
Q912B Q912G Q912R	35086004	TR,2SC3953-RA D
Q914B Q914G Q914R		
Q403 Q404	351G0556	TR DTA114WS-T
Q405	351G0560	TR DTA144WS-T
Q411 Q420 Q522	351G0601	TR DTC114ES-T
Q540 Q541 Q751		
Q401 Q402 Q431	351G0602	TR DTC144ES-T
Q432 Q433 Q434		
Q435 Q437 Q438		
Q580		
Q512	35121900	TR 2SK752
Q520 Q542	35122100	TR 2SK703
⚠Q551	35122200	TR 2SK854
Q525	35122500	TR 2SK758
⚠Q552	35123000	TR 2SK949
⚠Q549	35124100	TR 2SK1217

SYMBOL	PARTS NO	DESCRIPTION
*** DIODES ***		
ZD751	360A0034	DIODE MTZJ5.1A T-72
ZD510	360A0035	DIODE MTZJ5.1B T-72
ZD401	360A0038	DIODE MTZJ5.6A T-72
⚠ZD508	360A0043	DIODE MTZJ6.2B T-72
ZD561 ZD564	360A0059	DIODE MTZJ9.1B T-72
⚠D2003 ⚠D2004 D2005	360K1027	DI 1SS132 AT52
D406 D407 D410		
D411 D412 D413		
D414 D415 D416		
D509 D510 D511		
D512 D513 D514		
D515 D516 D517		
D518 D529 D530		
D531A D531B D531C		
D532 D533 D535		
D536 D538 D54A		
⚠D546 D548 D550		
D561 D562 D563		
D701B D701G D701R		
D710 D711 D781		
D801 D802 D803		
D804 D805 D806		
D807 D808 D809		
D810 D811 D812		
D813 D814 D815		
D816 D817 D911B	360K1027	DI 1SS132 AT52
D911G D911R D912B		
D912G D912R D913B		
D913G D913R D962		
⚠D523 ⚠D528 D549	360K1032	DIODE 1SS82-TA
D712 D713 D931B		
D931G D931R D961		
⚠ZD2001 ⚠ZD2002	360K3143	DIODE,RD8.2JSB(1)-T4
ZD861	360K3157	DIODE RD5.1EB(3)-T4
ZD501	360K3410	DIODE RD8.2JSB(2)/JSAB(2)
ZD2003	360K3605	DIODE RD2.2ESB(1)-T4
ZD506	360K3624	DIODE RD3.9ESB(2)-T4
ZD509	360K3643	DIODE RD6.2ESB(2)-T4
ZD961	360K3647	DIODE RD6.8ESB(2)-T4
ZD520	360K3655	DIODE RD8.2ESB(2)/ESAB(2)
ZD502	360K3671	DIODE RD12ESB(2)/ESAB(2)
ZD503 ZD504 ZD505	360K3677	DIODE RD15ESB-T4
ZD507	360K3679	DIODE RD15ESB(2)-T4
ZD402	360K3692	DIODE RD20ESB(3)-T4
ZD562	360K3792	DIODE MTZ 3.9B T-72
ZD563	360K3823	DIODE MTZ 8.2BT-72
D405 D504 D506	361K7160	DIODE TVR-06G G23
D508 D521 D522		
D527 ⚠D541 ⚠D542		
D543 ⚠D544 ⚠D547		
D520	361K7562	DIODE EGP10G G23
D519	36107293	DIODE RK14
D507	36107518	DIODE RG2
⚠D501	36107530	DIODE RS4FS

SYMBOL	PARTS NO	DESCRIPTION
⚠D540	36107560	DIODE RG2A2
D001 D002	36801331	LED SLR-54MT3F/PQ
⚠D2001 ⚠D2002	38005054	VARISTOR MA29W-A

*** TRANSFORMERS ***

T501	45803010	TRANS,H.DRIVE
T503	46304107	TRANS,CONVERTER
⚠T504	47105671	F.B.T (SR)
⚠T502	47710013	TRANS,H-OUT

*** VARIABLE RESISTORS ***

VR701B VR701G VR701R	410G1151	R,VARIABLE B100H
VR410 VR513	410G1155	R,VARIABLE B470H
VR781	410G1157	R,VARIABLE B1.0K
VR502	410G1159	R,VARIABLE B2.2K
VR411 VR921	410G1161	R,VARIABLE B4.7K
VR420 VR501	410G1163	R,VARIABLE B10K
VR401 VR931B VR931G VR931R	410G1165	R,VARIABLE B22K
VR531 VR532 VR533 VR535 VR536 VR538 VR932B VR932G	410G1167	R,VARIABLE B47K
VR001 VR002	41011106	R,VARIABLE B10K-V
VR004	41011303	R,VARIABLE B20K-V
VR005	41011310	R,VARIABLE B10K-V
VR006	41011312	R,VARIABLE B500
VR003	41011313	R,VARIABLE B50
VR007	41011314	R,VARIAVLE
VR511	41085009	R,VARIABLE B10K
VR510	41085012	R,VARIABLE B50K
⚠VR2001⚠VR2002	41505005	R,VARIABLE B2K
⚠VR516	41505009	R,VARIABLE B20K

*** RELAYS & SWITCHES ***

SW001	653F0031	SWITCH,PUSH BUTTON
	65360027	SWTCH,PUSH BUTTON

*** COILS & FILTERS ***

LC701B LC701G LC701R	390J9014	FILTER ZJSC-R33-390TA
R507	39030239	R,NETWORK
⚠L502	60919607	COIL,H.LIN
L504	60999004	COIL,CHOKE
L911B L911R	610E1706	COIL,FILTER 1.2UH
L911G	610E1708	COIL,FILTER 1.8UH
L912G	610E1711	COIL,FILTER 3.3UH
L912B L912R	610E1712	COIL,FILTER 3.9UH
L507	610F3025	COIL,FILTER 47UH
L501	610F7010	COIL,FILTER 2.7UH
L761	610F7025	COIL,FILTER 47UH
L931B L931R	610F8005	COIL,FILTER 1.0UH
L931G	610F8037	COIL,FILTER 0.56UH
	**61062076	POWER LINE FILTER
L506	61064006	COIL,FILTER 50UH
L505	61070127	FILTER CHOKC

SYMBOL	PARTS NO	DESCRIPTION
L509	61070181	COIL,CHOKE PJ87-102K
DG	61315203	COIL,DEGAUSSING
LC961	616J9003	NOISE FILTER ZJSC-2R2-101
LC501 L508	616K5101	INDUCTOR,BEADS
LC911B LC911G LC911R	616K6027	NOISE FILTER 2A222-TA
LC861 LC862 LC962	616K6028	NOISE FILTER 1H223X-TA
LC963	616K6029	NOISE FILTER
LC401	616K6718	NOISE FILTER

*** PWB ASSYS ***

	84N41CH3	PACKING, SUB PWB ASSY
	84N41DH4	PACKING, MAIN PWB ASSY

*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

SW-PS	**31104020	SW.REG.UNIT (SMP-120BB-1)
HS402	31709202	SHEET,INSULATOR
HS516 HS549	31709503	SHEET,INSULATOR
SG931B SG931G SG931R SG951	32990047	ARRESTER
X801	64098039	X'TAL(10.000MHZ)
SG952	66706002	SPARK GAP 1.5KV
⚠CN-CRT	70032055	CRT SOCKET(HPS0199)
CORD	70800066	LINE CORD E-3 #8011
CABLE	**73893101	CABLE SIGNAL MD15P-11P-BK
VR2001 VR2002 VR516	74004891	CAP

*** APPEARANCE PARTS ***

	**25313791	CABINET BACK ASSY
	**25313821	CABINET BOTTOM
	**25314111	CABINET FRONT ASSY
	**25419001	REVOLVING STAND ASSY
	**25419021	REVOLVING SPINDLE
	25419841	LID,CONTROL ASSY
	25534631	COIL SPRING
	25607291	SLIDE SHEET
	**25757643	LABEL(REV.)
	**25775942	NAME PLATE,INSTRUCTION

*** KNOBS & PUSH BUTTONS ***

	25454671	PUSH BUTTON (SW)
	**25454681	KNOB CONTROL

*** PRINTED & PACKING MATERIALS ***

	**24813191	BAG,POLYETHYLENE(150*370)
	**25823181	FILLER (T) CARTON
	**25823192	FILLER (B) CARTON
	25825081	CARTON BOX (JC-1521HMB)
	**25823751	SHEET, PROTECTION
	**25825621	MONITOR SALES OFFICE LIST
	**78125683	USER'S MANUAL JC-1521HMB
	599910331	S/M JC-1521HMB/B(EE)/R(N),(H)

*** RESISTORS ***

R001	401C6665	R,CARBON 470H 5% 1/4W
⚠R5D6	401C6673	R,CARBON 1.0K 5% 1/4W

SYMBOL	PARTS NO	DESCRIPTION
R5B0	401C6685	R,CARBON 3.3K 5% 1/4W
R571	401H5601	R,CARBON 1.0H 5% 1/2W
R570	401H5603	R,CARBON 1.2H 5% 1/2W
R5C2	401H5617	R,CARBON 4.7H 5% 1/2W
R937B R937G R937R	401H5641	R,CARBON 47H 5% 1/2W
R913B R913G R913R	401H5643	R,CARBON 56H 5% 1/2W
R914B R914G R914R	401H5645	R,CARBON 68H 5% 1/2W
R951	401H5649	R,CARBON 100H 5% 1/2W
R429 R961	401H5661	R,CARBON 330H 5% 1/2W
R759	401H5669	R,CARBON 680H 5% 1/2W
R553	401H5681	R,CARBON 2.2K 5% 1/2W
R952	401H5689	R,CARBON 4.7K 5% 1/2W
R5D7	401J9820	RD16Z,0H,AT52
R702B R702G R702R	401K5641	R,CARBON 47H 5% 1/6W
R5B7 R5B8 R912B	401K5647	R,CARBON 82H 5% 1/6W
R912G R912R		
⚠R2003 ⚠R2007 R5C4	401K5649	R,CARBON 100H 5% 1/6W
R529 R576 R704B		
R704G R704R R708B		
R708G R708R R788	401K5649	R,CARBON 100H 5% 1/6W
R911B R911G R911R		
R701B R701G R701R	401K5653	R,CARBON 150H 5% 1/6W
R403 R404 R405	401K5657	R,CARBON 220H 5% 1/6W
R50A R504 R757		
R804 R805 R806		
R807 R808 R810		
R811 R813		
R447 R801 R925	401K5661	R,CARBON 330H 5% 1/6W
R707B R707G R707R	401K5663	R,CARBON 390H 5% 1/6W
R938G		
R442 R497 R706B	401K5665	R,CARBON 470H 5% 1/6W
R706G R706R		
R752	401K5667	R,CARBON 560H 5% 1/6W
R915B R915G	401K5671	R,CARBON 820H 5% 1/6W
R407 R415 R416	401K5673	R,CARBON 1.0K 5% 1/6W
R434 R448 R5D9		
R5E9 R5F4 R5F8		
R526 R533 R536		
R538 R550 R552		
R705B R705G R705R		
R756 R781 R785		
R792 R901 R924		
R432 R436 R438	401K5675	R,CARBON 1.2K 5% 1/6W
R427 R433 R441	401K5677	R,CARBON 1.5K 5% 1/6W
R780		
R53B R915R R938B	401K5679	R,CARBON 1.8K 5% 1/6W
R2014 R401 R5F0	401K5681	R,CARBON 2.2K 5% 1/6W
R784 R926 R938R		
R406 R443 R535	401K5683	R,CARBON 2.7K 5% 1/6W
R786		
⚠R2011 ⚠R2013 R5A3	401K5685	R,CARBON 3.3K 5% 1/6W
R921 R923 R927		
R587 R731 R755	401K5687	R,CARBON 3.9K 5% 1/6W
R922		
R437 R522 R532	401K5689	R,CARBON 4.7K 5% 1/6W
R736 R928		
R5A8 R5D4 R5EA	401K5691	R,CARBON 5.6K 5% 1/6W
R580 R782		

SYMBOL	PARTS NO	DESCRIPTION
R5F3 R591 R732	401K5693	R,CARBON 6.8K 5% 1/6W
R783		
⚠R2010 ⚠R2012 R524	401K5695	R,CARBON 8.2K 5% 1/6W
R585 R787 R903		
⚠R2004 ⚠R2008 R402	401K5697	R,CARBON 10K 5% 1/6W
R412 R445 R5A0		
R5A2 R5A6 R5A9		
⚠R5CA R5C0 ⚠R5E0		
⚠R5E3 R5E6 R5E7		
R5H0 R5H1 R502		
R503 R506 R51A		
R530 R578 R583		
R593 R598 R703B		
R703G R703R R734		
R754 R802 R803		
R002 ⚠R2002 ⚠R2006	401K5699	R,CARBON 12K 5% 1/6W
R518 R521 R531		
R421 R47A R5A7	401K5701	R,CARBON 15K 5% 1/6W
R581 R592		
R751 R935B R935G	401K5703	R,CARBON 18K 5% 1/6W
R935R		
R423 R5B6 R520	401K5705	R,CARBON 22K 5% 1/6W
R523 R542 R545		
R55A R584		
⚠R2001 ⚠R2005 R546	401K5707	R,CARBON 27K 5% 1/6W
R411 R424 R493	401K5709	R,CARBON 33K 5% 1/6W
R5CB R525 R586		
R735 R789 R934B		
R934G R934R		
R5B1 R5B2 ⚠R5C8	401K5711	R,CARBON 39K 5% 1/6W
R422 R435 R494	401K5713	R,CARBON 47K 5% 1/6W
R495 R5E8 R53A		
R543 R544 R594		
R595 R597		
R547	401K5715	R,CARBON 56K 5% 1/6W
R936G	401K5717	R,CARBON 68K 5% 1/6W
R936B	401K5719	R,CARBON 82K 5% 1/6W
R492 R499 R5E5	401K5721	R,CARBON 100K 5% 1/6W
R5F5 R548 R596		
R5F2	401K5723	R,CARBON 120K 5% 1/6W
R933B R933G R933R	401K5727	R,CARBON 180K 5% 1/6W
R931B R931G R931R	401K5729	R,CARBON 220K 5% 1/6W
⚠R5E4 R932B R932G	401K5731	R,CARBON 270K 5% 1/6W
R932R		
R582	401K5737	R,CARBON 470K 5% 1/6W
R472 R491	401K5739	R,CARBON 560K 5% 1/6W
R498	401K5743	R,CARBON 820K 5% 1/6W
R480 R5A4 R5B5	401K5745	R,CARBON 1.0M 5% 1/6W
⚠R5H2 R733 R814		
R540	40107197	R,CARBON 10K 5% 1/6W
⚠R917B ⚠R917G ⚠R917R	40177133	R,CARBON 22H 5% 1/4W
⚠R918B ⚠R918G ⚠R918R		
⚠R572	403F1149	R,METAL OXIDE 100H 5% 1W
R562	403F1161	R,METAL 330H 5% 1W
R588	403F1175	R,METAL OXIDE 1.2K 5% 1W
R425	403F2103	R,METAL OXIDE 1.2H 5% 2W
R589	403F2133	R,METAL OXIDE 22H 5% 2W
R861	403F2141	R,METAL OXIDE 47H 5% 2W
⚠R5D0	403F2163	R,METAL OXIDE 390H 5% 2W

SYMBOL	PARTS NO	DESCRIPTION
R431	403F3147	R,METAL OXIDE 82H 5% 3W
R557	403F3169	R,METAL OXIDE 680H 5% 3W
R558	403F3171	R,METAL OXIDE 820H 5% 3W
R916B R916G	40318273	R,METAL 1.0K 5% 7W
R916R	40318998	R,METAL 1.0K 5% 7W
R561	40371167	R,METAL 560H 5% 1W
R5E1	40372109	R,METAL 2.2H 5% 2W
R513	404C1681	R,METAL 2.2K 1% 1/6W
R514	404C1683	R,METAL 2.7K 1% 1/6W
R510	404C1687	R,METAL 3.9K 1% 1/6W
R539	404C1695	R,METAL 8.2K 1% 1/6W
R511 R753 R790	404C1697	R,METAL 10K 1% 1/6W
R457	404C1700	R,METAL 13K 1% 1/6W
R439 R473 R483	404C1701	R,METAL 15K 1% 1/6W
R512 R527		
R451 R487 R528	404C1702	R,METAL 16K 1% 1/6W
R410 R476 R484	404C1703	R,METAL 18K 1% 1/6W
R409	404C1704	R,METAL 20K 1% 1/6W
R420 R471 R479	404C1707	R,METAL 27K 1% 1/6W
R452 R454	404C1709	R,METAL 33K 1% 1/6W
R496	404C1711	R,METAL 39K 1% 1/6W
R408 R458	404C1714	R,METAL 51K 1% 1/6W
R791	404C1715	R,METAL 56K 1% 1/6W
R477 R478	404C1717	R,METAL 68K 1% 1/6W
R474 R475	404C1718	R,METAL 75K 1% 1/6W
R936R	404C1720	R,METAL 91K 1% 1/6W
R482	404C1721	R,METAL 100K 1% 1/6W
R453	404C1723	R,METAL 120K 1% 1/6W
R515 R517	404C1725	R,METAL 150K 1% 1/6W
R486	404C1726	R,METAL 160K 1% 1/6W
R455 R470 R516	404C1727	R,METAL 180K 1% 1/6W
R5D2	404C1731	R,METAL 270K 1% 1/6W
R481 R485 R490	404C1733	R,METAL 330K 1% 1/6W
R519		
R509	404C1739	R,METAL 560K 1% 1/6W
⚠R5C5 ⚠R5C6 ⚠R5C7	404K5109	R,METAL 2.2H 5% 1/4W
⚠R430	404K5117	R,METAL 4.7H 5% 1/4W
⚠R5C1 ⚠R551	404K5133	R,METAL 22H 5% 1/4W
⚠R760	404K5149	R,METAL 100H 5% 1/4W
⚠R465A	404K5345	R,METAL 1.0H 5% 1/4W
⚠R5D1	40405109	R,METAL 2.2H 5% 1/4W
⚠R5B9	40406101	R,METAL 1.0H 5% 1/2W
⚠R461 ⚠R590	409A6125	R,FUSE 10H 5% 1/4W

*** CAPACITORS ***

SYMBOL	PARTS NO	DESCRIPTION
C520 C541	420C9560	C,CERAMIC 500V 560PF
C557 C931B C931G	420C9563	C,CERAMIC 500V 1000PF
C931R		
C5A2 ⚠C525	420C9565	C,CERAMIC 500V 1500PF
C932B C932G C932R	420C9567	C,CERAMIC 500V 2200PF
C962		
C559 C914B C914G	420C9569	C,CERAMIC 50V 3300PF
C914R		
C951	420DK108	C,CERAMIC 2KV 10000PF
C431 C5B0 C5B1	421A0425	C,CERAMIC 50V 0.01UF
C5B3 C5B4 C530		
C763		
C401	421C0208	C,CERAMIC 50V 390PF
C916B C916G C916R	421C0209	C,CERAMIC 50V 470PF
C5C2	421C0210	C,CERAMIC 50V 560PF
C551 C757 C804	421C0213	C,CERAMIC 50V 1000PF
C462 C512 C549	421D6009	C,CERAMIC 25V 0.1UF
C564 C702B C702G		
C702R C752 C753		
C754 C762 C766	421D6009	C,CERAMIC 25V 0.1UF
C767 C768 C784		
C803 C861 C863		
C864 C865 C901		
C911B C911G C911R		
C921 C964 C965		
C423 C562 C782	421D6013	C,CERAMIC 50V 0.1UF
C783		
C703B C703G C703R	423A1033	C,CERAMIC 50V 33PF
C413	423A1053	C,CERAMIC 50V 220PF
C801 C802	423A2025	C,CERAMIC 50V 15PF
C732 C756	423A2031	C,CERAMIC 50V 27PF
C537	423A2037	C,CERAMIC 50V 47PF
C502 C912B C912G	423A2045	C,CERAMIC 50V 100PF
C912R		
C504	423A2105	C,CERAMIC 50V 270PF
C505	427F4607	C,FILM 50V 3300PF
C507 C540	427F4613	C,FILM 50V 0.01UF
C404	427F4615	C,FILM 50V 0.015UF
C434	427F4623	C,FILM 50V 0.068UF
C422 C425	427F4625	C,FILM 50V 0.1UF
C424	427F4629	C,FILM 50V 0.22UF
C503	427F4647	C,FILM 50V 470PF
C534 C535 C546	427F4651	C,FILM 50V 1000PF
C533	427F4655	C,FILM 50V 2200PF
C513 C536 C552	427F4663	C,FILM 50V 0.01UF
C755	427F4669	C,FILM 50V 0.033UF
⚠C583	427F4673	C,FILM 50V 0.068UF
C592	427F4675	C,FILM 50V 0.1UF
C509	427F8404	C,FILM 100V 1800PF
C532	42703663	C,FILM 400V 0.01UF
⚠C572	42703865	C,FILM 400V 0.015UF
C731	4276D213	C,MYLAR 200V 0.01UF
C403 C410	428B3025	C,METAL FILM 50V 1.0UF
⚠C570	42807514	C,FILM 1.6KV 3600PF
⚠C523	42807517	C,FILM 1.6KV 4700PF
⚠C571	42808589	C,METAL FILM 1.6KV 7400PF
⚠C526	42839613	C,METAL 400V 0.56UF
⚠C529	42839655	C,METAL 200V 0.22UF
C915B C915G C915R	42840097	C,FILM 250V 0.22UF
⚠C524	42899914	C,METAL FILM 400V 0.18UF
C416	430BF047	C,ELEC 25V 2200UF
C913B C913G C913R	430B3182	C,ELEC 160V 1.0UF
C5C0 C5C1	430B6017	C,ELEC 10V 220UF
C862 C902	430B6029	C,ELEC 16V 100UF

SYMBOL	PARTS NO	DESCRIPTION
C566	430B6032	C,ELEC 16V 470UF
C5A0 C765	430B6053	C,ELEC 35V 47UF
C417	430B6054	C,ELEC 35V 100UF
⚠C585	430B6055	C,ELEC 35V 220UF
C555	430B6057	C,ELEC 35V 470UF
C415 C420 C432 C510 C511 C550	430B6061	C,ELEC 50V 1.0UF
C421 C5C3	430B6064	C,ELEC 50V 4.7UF
C5A6 C542 C543 C544 C545 ⚠C581 ⚠C593	430B6065	C,ELEC 50V 10UF
C538 ⚠C578 ⚠C586 ⚠C589	430B6068	C,ELEC 50V 47UF
C441 C558	430B6512	C,ELEC 160V 1.0UF
C5A1 C568 C966	430B6556	C,ELEC 250V 10UF
C576	430B8177	C,ELEC 50V 3.3UF
⚠C579	430B9016	C,ELEC 10V 100UF
⚠C2001	430B9017	C,ELEC 10V 220UF
⚠C2002	430B9019	C,ELEC 10V 470UF
C701B C701G C701R C751	430B9025	C,ELEC 16V 10UF
C567	430B9029	C,ELEC 16V 100UF
C461 C522	430B9030	C,ELEC 16V 220UF
C563 C761	430B9032	C,ELEC 16V 470UF
C465	430B9033	C,ELEC 16V 1000UF
C961 C963	430B9041	C,ELEC 25V 47UF
C561	430B9042	C,ELEC 25V 100UF
C553	430B9043	C,ELEC 25V 220UF
C411 C412	430B9054	C,ELEC 35V 100UF
C506 C508	430B9061	C,ELEC 50V 1.0UF
C419	430B9062	C,ELEC 50V 2.2UF
C426	430B9066	C,ELEC 50V 22UF
C402	430B9221	C,ELEC 50V 0.1UF
C548	430B9536	C,ELEC 200V 10UF
C565	430B9556	C,ELEC 250V 10UF
⚠C580	4309H060	C,ELEC 250V 3.3UF
⚠C582	433A3033	C,ELEC 25V 10UF
C427	433A3043	C,ELEC 35V 4.7UF
C781	433J9021	C,ELEC 25V 10UF
C501	4339J021	C,ELEC 25V 10UF

REPLACEMENT PARTS LIST

The components specified for Model JC-1521HMB(EE)(N).

Notes: 1. The components identified by ⚠ mark are critical for safety. Replace only with parts Number specified.
2. Parts identified with**are British made parts.

SYMBOL	PARTS NO	DESCRIPTION
*** CRT & TUNER ***		
⚠CRT	33015519	CRT M36KME23XX23(T3)
*** ICS ***		
⚠IC504	370A1009	IC UPC1093J-T (REG)
IC502	37005182	IC LM7812CT(REG)
IC752	37011018	IC UPC311C (COMP)
IC403 IC404 IC501 IC505 IC506	37011210	IC XRA10324 (Q OP-AMP)
⚠IC401	37056494	IC LA7853
IC402	37056689	IC LA7837
IC751	37056846	IC LM1203N
IC801	37056853	MOS PCZ80-145
IC503	37101543	IC XRA10339
*** TRANSISTORS ***		
Q413	350A1117	TR 2SA1515-T Q
Q545	350C1218	TR 2SB1329-T105 R
⚠Q2002 ⚠Q2004 Q410 Q421 Q502 Q510 Q523 Q543 Q546 Q547 Q701 Q702 Q703 Q782 Q783 Q922	350E3218	TR 2SC1740S-T R
Q544	350G1018	TR 2SD2005-T105 R
Q423 Q574 Q932B Q932G Q932R	350H4417	TR,2SC1473-TA Q
Q911B Q911G Q911R	350H5017	TR,2SC3811-TA Q
Q412	350J2717	TR 2SC3377-T Q
Q424 ⚠Q570 Q931B Q931G Q931R	350K5217	TR,2SA1018-TA Q
⚠Q2001 ⚠Q2003 Q501 Q511 Q521 Q524 Q548 Q573 Q752 Q781 Q901 Q921	350K5718	TR 2SA933S-T R
Q913B Q913G Q913R	35006804	TR,2SA1538-RA D
Q526	35056312	TR 2SC2688 L
⚠Q516	35082401	TR 2SC3486-YB
Q912B Q912G Q912R Q914B Q914G Q914R	35086004	TR,2SC3953-RA D
Q403 Q404	351G0556	TR DTA114WS-T
Q405	351G0560	TR DTA144WS-T
Q411 Q420 Q522 Q540 Q541 Q751	351G0601	TR DTC114ES-T
Q401 Q402 Q431 Q432 Q433 Q434 Q435 Q437 Q438 Q580	351G0602	TR DTC144ES-T
Q512	35121900	TR 2SK752
Q520 Q542	35122100	TR 2SK703
⚠Q551	35122200	TR 2SK854
Q525	35122500	TR 2SK758
⚠Q552	35123000	TR 2SK949
⚠Q549	35124100	TR 2SK1217

SYMBOL	PARTS NO	DESCRIPTION
*** DIODES ***		
ZD751	360A0034	DIODE MTZJ5.1A T-72
ZD510	360A0035	DIODE MTZJ5.1B T-72
ZD401	360A0038	DIODE MTZJ5.6A T-72
⚠ZD508	360A0043	DIODE MTZJ6.2B T-72
ZD561 ZD564	360A0059	DIODE MTZJ9.1B T-72
⚠D2003 ⚠D2004 D2005 D406 D407 D410 D411 D412 D413 D414 D415 D416 D509 D510 D511 D512 D513 D514 D515 D516 D517 D518 D529 D530 D531A D531B D531C D532 D533 D535 D536 D538 D54A ⚠D546 D548 D550 D561 D562 D563 D701B D701G D701R D710 D711 D781 D801 D802 D803 D804 D805 D806 D807 D808 D809 D810 D811 D812 D813 D814 D815	360K1027	DI 1SS132 AT52
D816 D817 D911B D911G D911R D912B D912G D912R D913B D913G D913R D962	360K1027	DI 1SS132 AT52
⚠D523 ⚠D528 D549 D712 D713 D931B D931G D931R D961	360K1032	DIODE 1SS82-TA
⚠ZD2001 ⚠ZD2002	360K3143	DIODE,RD8.2JSB(1)-T4
ZD501	360K3410	DIODE RD8.2JSB(2)/JSAB(2)
ZD2003	360K3605	DIODE RD2.2ESB(1)-T4
ZD506	360K3624	DIODE RD3.9ESB(2)-T4
ZD509	360K3643	DIODE RD6.2ESB(2)-T4
ZD961	360K3647	DIODE RD6.8ESB(2)-T4
ZD520	360K3655	DIODE RD8.2ESB(2)/ESAB(2)
ZD502	360K3671	DIODE RD12ESB(2)/ESAB(2)
ZD503 ZD504 ZD505	360K3677	DIODE RD15ESB-T4
ZD507	360K3679	DIODE RD15ESB(2)-T4
ZD402	360K3692	DIODE RD20ESB(3)-T4
ZD562	360K3792	DIODE MTZ 3.9B T-72
ZD861	360K3804	DIODE MTZ5.1C T-72
ZD563	360K3823	DIODE MTZ 8.2BT-72
D405 D504 D506 D508 D521 D522 D527 ⚠D541 ⚠D542 D543 ⚠D544 ⚠D547	361K7160	DIODE TVR-06G G23
D520	361K7562	DIODE EGP10G G23
D519	36107293	DIODE RK14
D507	36107518	DIODE RG2
⚠D501	36107530	DIODE RS4FS

SYMBOL	PARTS NO	DESCRIPTION
△D540	36107560	DIODE RG2A2
D001 D002	36801331	LED SLR-54MT3F/PQ
△D2001 △D2002	38005054	VARISTOR MA29W-A

*** TRANSFORMERS ***

T501	45803010	TRANS,H.DRIVE
T503	46304107	TRANS,CONVERTER
△T504	47105671	F.B.T (SR)
△T502	47710013	TRANS,H-OUT

*** VARIABLE RESISTORS ***

VR701B VR701G VR701R	410G1151	R,VARIABLE B100H
VR410 VR513	410G1155	R,VARIABLE B470H
VR781	410G1157	R,VARIABLE B1.0K
VR502	410G1159	R,VARIABLE B2.2K
VR411 VR921	410G1161	R,VARIABLE B4.7K
VR420 VR501	410G1163	R,VARIABLE B10K
VR401	410G1165	R,VARIABLE B22K
VR931B VR931G VR931R	410G1166	R,VARIABLE B33K
VR531 VR532 VR533	410G1167	R,VARIABLE B47K
VR535 VR536 VR538		
VR932B VR932G		
VR001 VR002	41011106	R,VARIABLE B10K-V
VR004	41011303	R,VARIABLE B20K-V
VR005	41011310	R,VARIABLE B10K-V
VR006	41011312	R,VARIABLE B500
VR003	41011313	R,VARIABLE B50
VR007	41011314	R,VARIAVLE
VR511	41085009	R,VARIABLE B10K
VR510	41085012	R,VARIABLE B50K
△VR2001△VR2002	41505005	R,VARIABLE B2K
△VR516	41505009	R,VARIABLE B20K

*** RELAYS & SWITCHES ***

SW001	653F0031	SWITCH,PUSH BUTTON
	65360027	SWTCH,PUSH BUTTON

*** COILS & FILTERS ***

LC701B LC701G LC701R	390J9014	FILTER ZJSC-R33-390TA
R507	39030239	R,NETWORK
△L502	60919117	COIL,H.LIN
L504	60999004	COIL,CHOKE
L911B L911R	610E1706	COIL,FILTER 1.2UH
L911G	610E1708	COIL,FILTER 1.8UH
L912G	610E1711	COIL,FILTER 3.3UH
L912B L912R	610E1712	COIL,FILTER 3.9UH
L507	610F3025	COIL,FILTER 47UH
L501	610F7010	COIL,FILTER 2.7UH
L761	610F7025	COIL,FILTER 47UH
L931B L931R	610F8005	COIL,FILTER 1.0UH
L931G	610F8037	COIL,FILTER 0.56UH
	**61062076	POWER LINE FILTER
L506	61064006	COIL,FILTER 50UH
L505	61070127	FILTER CHOKC

SYMBOL	PARTS NO	DESCRIPTION
L509	61070181	COIL,CHOKE PJ87-102K
	61315203	COIL,DEGAUSSING
LC961	616J9003	NOISE FILTER ZJSC-2R2-101
LC501 L508	616K5101	INDUCTOR,BEADS
LC911B LC911G LC911R	616K6027	NOISE FILTER 2A222-TA
LC861 LC862 LC962	616K6028	NOISE FILTER 1H223X-TA
LC963	616K6029	NOISE FILTER
LC401	616K6718	NOISE FILTER

*** PWB ASSYS ***

	84N59CH3	PACKING, SUB PWB ASSY
	84N59DH4	PACKING, MAIN PWB ASSY

*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

SW-PS	**31104020	SW.REG.UNIT (SMP-120BB-1)
HS402	31709202	SHEET,INSULATOR
HS516 HS549	31709503	SHEET,INSULATOR
SG931B SG931G SG931R	32990047	ARRESTER
SG951		
X801	64098039	X'TAL(10.000MHZ)
SG952	66706002	SPARK GAP 1.5KV
△CN-CRT	70032055	CRT SOCKET(HPS0199)
CORD	70800324	LINE,POWER
CABLE	**73893101	CABLE SIGNAL MD15P-11P-BK
VR2001 VR2002 VR516	74004891	CAP

*** APPEARANCE PARTS ***

	**25313791	CABINET BACK ASSY
	**25313821	CABINET BOTTOM
	**25314111	CABINET FRONT ASSY
	**25419001	REVOLVING STAND ASSY
	**25419021	REVOLVING SPINDLE
	25419841	LID,CONTROL ASSY
	25534631	COIL SPRING
	25607291	SLIDE SHEET
	**25757643	LABEL(REV.)
	**25775942	NAME PLATE,INSTRUCTION

*** KNOBS & PUSH BUTTONS ***

	25454671	PUSH BUTTON (SW)
	**25454681	KNOB CONTROL

*** PRINTED & PACKING MATERIALS ***

	**24813191	BAG,POLYETHYLENE(150*370)
	**25775751	LABEL (EE)
	**25823181	FILLER (T) CARTON
	**25823192	FILLER (B) CARTON
	**25823751	CARTON BOX (JC-1521HMB)
	**25825621	SHEET, PROTECTION
	**78034406	MONITOR SALES OFFICE LIST
	**78125683	USER'S MANUAL JC-1521HMB
	599910331	S/M JC-1521HMB/B(EE)/ R(N),(H)

*** RESISTORS ***

SYMBOL	PARTS NO	DESCRIPTION
R001	401C6665	R,CARBON 470H 5% 1/4W
⚠R5D6	401C6673	R,CARBON 1.0K 5% 1/4W
R5B0	401C6685	R,CARBON 3.3K 5% 1/4W
R571	401H5601	R,CARBON 1.0H 5% 1/2W
R570	401H5603	R,CARBON 1.2H 5% 1/2W
R5C2	401H5617	R,CARBON 4.7H 5% 1/2W
R937B R937G R937R	401H5641	R,CARBON 47H 5% 1/2W
R913B R913G R913R	401H5643	R,CARBON 56H 5% 1/2W
R914B R914G R914R	401H5645	R,CARBON 68H 5% 1/2W
R951	401H5649	R,CARBON 100H 5% 1/2W
R429	401H5659	R,CARBON 270H 5% 1/2W
R961	401H5661	R,CARBON 330H 5% 1/2W
R759	401H5669	R,CARBON 680H 5% 1/2W
R553	401H5681	R,CARBON 2.2K 5% 1/2W
R952	401H5689	R,CARBON 4.7K 5% 1/2W
R5D7	401J9820	RD16Z,0H,AT52
R702B R702G R702R	401K5641	R,CARBON 47H 5% 1/6W
R5B7 R5B8 R912B	401K5647	R,CARBON 82H 5% 1/6W
R912G R912R		
⚠R2003 ⚠R2007 R5C4	401K5649	R,CARBON 100H 5% 1/6W
R529 R576 R704B		
R704G R704R R708B	401K5649	R,CARBON 100H 5% 1/6W
R708G R708R R788		
R911B R911G R911R		
R701B R701G R701R	401K5653	R,CARBON 150H 5% 1/6W
R403 R404 R405	401K5657	R,CARBON 220H 5% 1/6W
R50A R504 R757		
R804 R805 R806		
R807 R808 R810		
R811 R813		
R447 R801 R925	401K5661	R,CARBON 330H 5% 1/6W
R707B R707G R707R	401K5663	R,CARBON 390H 5% 1/6W
R938G		
R442 R497 R706B	401K5665	R,CARBON 470H 5% 1/6W
R706G R706R		
R752	401K5667	R,CARBON 560H 5% 1/6W
R915B R915G	401K5671	R,CARBON 820H 5% 1/6W
R407 R415 R416	401K5673	R,CARBON 1.0K 5% 1/6W
R434 R448 R5D9		
R5E9 R5F4 R5F8		
R526 R533 R536		
R538 R550 R552		
R705B R705G R705R		
R756 R781 R785		
R792 R901 R924		
R432 R436 R438	401K5675	R,CARBON 1.2K 5% 1/6W
R427 R433 R441	401K5677	R,CARBON 1.5K 5% 1/6W
R780		
R53B R915R R938B	401K5679	R,CARBON 1.8K 5% 1/6W
R2014 R401 R5F0	401K5681	R,CARBON 2.2K 5% 1/6W
R784 R926 R938R		
R406 R443 R535	401K5683	R,CARBON 2.7K 5% 1/6W
R786		
⚠R2011 ⚠R2013 R5A3	401K5685	R,CARBON 3.3K 5% 1/6W
R921 R923 R927		
R587 R731 R755	401K5687	R,CARBON 3.9K 5% 1/6W
R922		

SYMBOL	PARTS NO	DESCRIPTION
R437 R522 R532	401K5689	R,CARBON 4.7K 5% 1/6W
R736 R928		
R5A8 R5D4 R5EA	401K5691	R,CARBON 5.6K 5% 1/6W
R580 R782		
R5F3 R591 R732	401K5693	R,CARBON 6.8K 5% 1/6W
R783	401K5693	R,CARBON 6.8K 5% 1/6W
⚠R2010 ⚠R2012 R524	401K5695	R,CARBON 8.2K 5% 1/6W
R585 R787 R903		
⚠R2004 ⚠R2008 R402	401K5697	R,CARBON 10K 5% 1/6W
R412 R445 R5A0		
R5A2 R5A6 R5A9		
⚠R5CA R5C0 ⚠R5E0		
⚠R5E3 R5E6 R5E7		
R5H0 R5H1 R502		
R503 R506 R530		
R578 R583 R593		
R598 R703B R703G		
R703R R734 R754		
R802 R803		
R002 ⚠R2002 ⚠R2006	401K5699	R,CARBON 12K 5% 1/6W
R518 R521 R531		
R421 R43A R47A	401K5701	R,CARBON 15K 5% 1/6W
R5A7 R581 R592		
R751 R935B R935G	401K5703	R,CARBON 18K 5% 1/6W
R935R		
R423 R5B6 R520	401K5705	R,CARBON 22K 5% 1/6W
R523 R542 R545		
R55A R584		
⚠R2001 ⚠R2005 R546	401K5707	R,CARBON 27K 5% 1/6W
R411 R424 R493	401K5709	R,CARBON 33K 5% 1/6W
R5CB R525 R586		
R735 R789 R934B		
R934G R934R		
R5B1 R5B2 ⚠R5C8	401K5711	R,CARBON 39K 5% 1/6W
R422 R435 R494	401K5713	R,CARBON 47K 5% 1/6W
R495 R5E8 R53A		
R543 R544 R594		
R595 R597		
R547	401K5715	R,CARBON 56K 5% 1/6W
R936G	401K5717	R,CARBON 68K 5% 1/6W
R936B	401K5719	R,CARBON 82K 5% 1/6W
R492 R499 R5E5	401K5721	R,CARBON 100K 5% 1/6W
R5F5 R548 R596		
R5F2	401K5723	R,CARBON 120K 5% 1/6W
R933B R933G R933R	401K5727	R,CARBON 180K 5% 1/6W
R931B R931G R931R	401K5729	R,CARBON 220K 5% 1/6W
⚠R5E4 R932B R932G	401K5731	R,CARBON 270K 5% 1/6W
R932R		
R582	401K5737	R,CARBON 470K 5% 1/6W
R472 R491	401K5739	R,CARBON 560K 5% 1/6W
R498	401K5743	R,CARBON 820K 5% 1/6W
R480 R5A4 R5B5	401K5745	R,CARBON 1.0M 5% 1/6W
⚠R5H2 R733 R814		
R540	40107197	R,CARBON 10K 5% 1/6W
⚠R917B ⚠R917G ⚠R917R	40177133	R,CARBON 22H 5% 1/4W
⚠R918B ⚠R918G ⚠R918R		
R562	403F1161	R,METAL 330H 5% 1W
R588	403F1175	R,METAL OXIDE 1.2K 5% 1W

SYMBOL	PARTS NO	DESCRIPTION
R425	403F2103	R,METAL OXIDE 1.2H 5% 2W
R589	403F2133	R,METAL OXIDE 22H 5% 2W
⚠R572 R861	403F2141	R,METAL OXIDE 47H 5% 2W
⚠R5D0	403F2163	R,METAL OXIDE 390H 5% 2W
R431	403F3147	R,METAL OXIDE 82H 5% 3W
R557	403F3169	R,METAL OXIDE 680H 5% 3W
R558	403F3171	R,METAL OXIDE 820H 5% 3W
R916B R916G	40318273	R,METAL 1.0K 5% 7W
R916R	40318998	R,METAL 1.0K 5% 7W
⚠R5E1	40372109	R,METAL 2.2H 5% 2W
R513	404C1681	R,METAL 2.2K 1% 1/6W
R514	404C1683	R,METAL 2.7K 1% 1/6W
R510	404C1687	R,METAL 3.9K 1% 1/6W
R539	404C1695	R,METAL 8.2K 1% 1/6W
R511 R753 R790	404C1697	R,METAL 10K 1% 1/6W
R457	404C1700	R,METAL 13K 1% 1/6W
R439 R473 R483	404C1701	R,METAL 15K 1% 1/6W
R487 R512 R527		
R451 R484 R528	404C1702	R,METAL 16K 1% 1/6W
R410 R476	404C1703	R,METAL 18K 1% 1/6W
R409	404C1704	R,METAL 20K 1% 1/6W
R420 R471 R479	404C1707	R,METAL 27K 1% 1/6W
R452 R454	404C1709	R,METAL 33K 1% 1/6W
R496	404C1711	R,METAL 39K 1% 1/6W
R408 R458	404C1714	R,METAL 51K 1% 1/6W
R791	404C1715	R,METAL 56K 1% 1/6W
R477 R478	404C1717	R,METAL 68K 1% 1/6W
R474 R475	404C1718	R,METAL 75K 1% 1/6W
R936R	404C1720	R,METAL 91K 1% 1/6W
R482	404C1721	R,METAL 100K 1% 1/6W
R453	404C1723	R,METAL 120K 1% 1/6W
R515 R517	404C1725	R,METAL 150K 1% 1/6W
R486	404C1726	R,METAL 160K 1% 1/6W
R455 R470 R516	404C1727	R,METAL 180K 1% 1/6W
R5D2	404C1731	R,METAL 270K 1% 1/6W
R481 R485 R490	404C1733	R,METAL 330K 1% 1/6W
R519		
R509	404C1739	R,METAL 560K 1% 1/6W
⚠R5C5 ⚠R5C6 ⚠R5C7	404K5109	R,METAL 2.2H 5% 1/4W
⚠R430	404K5117	R,METAL 4.7H 5% 1/4W
⚠R5C1 ⚠R551	404K5133	R,METAL 22H 5% 1/4W
⚠R760	404K5149	R,METAL 100H 5% 1/4W
⚠R465A	404K5345	R,METAL 1.0H 5% 1/4W
⚠R5D1	40405109	R,METAL 2.2H 5% 1/4W
⚠R5B9	40406101	R,METAL 1.0H 5% 1/2W
R561	40406169	R,METAL 680H 5% 1/2W
⚠R461 ⚠R590	409A6125	R,FUSE 10H 5% 1/4W

*** CAPACITORS ***

C520 C541	420C9560	C,CERAMIC 500V 560PF
C557 C931B C931G	420C9563	C,CERAMIC 500V 1000PF
C931R		
C5A2 ⚠C525	420C9565	C,CERAMIC 500V 1500PF
C932B C932G C932R	420C9567	C,CERAMIC 500V 2200PF
C962		

SYMBOL	PARTS NO	DESCRIPTION
C559 C914B C914G	420C9569	C,CERAMIC 50V 3300PF
C914R		
C951	420DK108	C,CERAMIC 2KV 10000PF
C431 C5B0 C5B1	421A0425	C,CERAMIC 50V 0.01UF
C5B3 C5B4 C530		
C763		
C401	421C0208	C,CERAMIC 50V 390PF
C916B C916G C916R	421C0209	C,CERAMIC 50V 470PF
C5C2	421C0210	C,CERAMIC 50V 560PF
C551 C757 C804	421C0213	C,CERAMIC 50V 1000PF
C462 C512 C549	421D6009	C,CERAMIC 25V 0.1UF
C564 C702B C702G		
C702R C752 C753		
C754 C762 C766	421D6009	C,CERAMIC 25V 0.1UF
C767 C768 C784		
C803 C861 C863		
C864 C865 C901		
C911B C911G C911R		
C921 C964 C965		
C423 C562 C782	421D6013	C,CERAMIC 50V 0.1UF
C783		
C703B C703G C703R	423A1033	C,CERAMIC 50V 33PF
C413	423A1053	C,CERAMIC 50V 220PF
C801 C802	423A2025	C,CERAMIC 50V 15PF
C732 C756	423A2031	C,CERAMIC 50V 27PF
C537	423A2037	C,CERAMIC 50V 47PF
C502 C912B C912G	423A2045	C,CERAMIC 50V 100PF
C912R		
C504	423A2105	C,CERAMIC 50V 270PF
C505	427F4607	C,FILM 50V 3300PF
C507 C540	427F4613	C,FILM 50V 0.01UF
C404	427F4615	C,FILM 50V 0.015UF
C410A	427F4617	C,FILM 50V 0.022UF
C422 C425 C434	427F4625	C,FILM 50V 0.1UF
C424	427F4629	C,FILM 50V 0.22UF
C503	427F4647	C,FILM 50V 470PF
C534 C535 C546	427F4651	C,FILM 50V 1000PF
C533	427F4655	C,FILM 50V 2200PF
C536 C552	427F4663	C,FILM 50V 0.01UF
C755	427F4669	C,FILM 50V 0.033UF
⚠C583	427F4673	C,FILM 50V 0.068UF
C592	427F4675	C,FILM 50V 0.1UF
C509	427F8404	C,FILM 100V 1800PF
C532	42703663	C,FILM 400V 0.01UF
⚠C572	42703865	C,FILM 400V 0.015UF
C731	4276D213	C,MYLAR 200V 0.01UF
C415	428B3024	C,METAL FILM 50V 0.82UF
C403 C410	428B3025	C,METAL FILM 50V 1.0UF
⚠C570	42807514	C,FILM 1.6KV 3600PF
⚠C523	42808075	C,FILM 1.6KV 5200PF
⚠C571	42808589	C,METAL FILM 1.6KV 7400PF
⚠C526	42839614	C,METAL 400V 0.62UF
⚠C529	42839655	C,METAL 200V 0.22UF
C915B C915G C915R	42840097	C,FILM 250V 0.22UF
⚠C524	42899914	C,METAL FILM 400V 0.18UF

SYMBOL	PARTS NO	DESCRIPTION
C416	430BF047	C,ELEC 25V 2200UF
C913B C913G C913R	430B3182	C,ELEC 160V 1.0UF
C5C0 C5C1	430B6017	C,ELEC 10V 220UF
C862 C902	430B6029	C,ELEC 16V 100UF
C566	430B6032	C,ELEC 16V 470UF
C5A0 C765	430B6053	C,ELEC 35V 47UF
C417	430B6054	C,ELEC 35V 100UF
⚠C585	430B6055	C,ELEC 35V 220UF
C555	430B6057	C,ELEC 35V 470UF
C420 C432 C510	430B6061	C,ELEC 50V 1.0UF
C511 C550		
C421 C5C3	430B6064	C,ELEC 50V 4.7UF
C5A6 C542 C543	430B6065	C,ELEC 50V 10UF
C544 C545 ⚠C581		
⚠C593		
C538 ⚠C578 ⚠C586	430B6068	C,ELEC 50V 47UF
C589		
C441 C558	430B6512	C,ELEC 160V 1.0UF
C5A1 C568 C966	430B6556	C,ELEC 250V 10UF
C576	430B8177	C,ELEC 50V 3.3UF
⚠C579	430B9016	C,ELEC 10V 100UF
⚠C2001	430B9017	C,ELEC 10V 220UF
⚠C2002	430B9019	C,ELEC 10V 470UF
C701B C701G C701R	430B9025	C,ELEC 16V 10UF
C751		
C567	430B9029	C,ELEC 16V 100UF
C461 C522	430B9030	C,ELEC 16V 220UF
C563 C761	430B9032	C,ELEC 16V 470UF
C465	430B9033	C,ELEC 16V 1000UF
C961 C963	430B9041	C,ELEC 25V 47UF
C561	430B9042	C,ELEC 25V 100UF
C553	430B9043	C,ELEC 25V 220UF
C411 C412	430B9054	C,ELEC 35V 100UF
C506 C508	430B9061	C,ELEC 50V 1.0UF
C419	430B9062	C,ELEC 50V 2.2UF
C426	430B9066	C,ELEC 50V 22UF
C402	430B9221	C,ELEC 50V 0.1UF
C548	430B9536	C,ELEC 200V 10UF
C565	430B9556	C,ELEC 250V 10UF
⚠C580	4309H060	C,ELEC 250V 3.3UF
⚠C582	433A3033	C,ELEC 25V 10UF
C427	433A3043	C,ELEC 35V 4.7UF
C781	433J9021	C,ELEC 25V 10UF
C501	4339J021	C,ELEC 25V 10UF

REPLACEMENT PARTS LIST

The components specified for Model JC-1521HMB(EE)(H).

Notes:
1. The components identified by ⚠ mark are critical for safety. Replace only with parts Number specified.
2. Parts identified with**are British made parts.

SYMBOL	PARTS NO	DESCRIPTION
*** CRT & TUNER ***		
⚠CRT	33015508	CRT M36KLH680X83
*** ICS ***		
⚠IC504	370A1009	IC UPC1093J-T (REG)
IC502	37005182	IC LM7812CT(REG)
IC752	37011018	IC UPC311C (COMP)
IC403 IC404 IC501	37011210	IC XRA10324 (Q OP-AMP)
IC505 IC506		
⚠IC401	37056494	IC LA7853
IC402	37056689	IC LA7837
IC751	37056846	IC LM1203N
IC801	37056853	MOS PCZ80-145
IC503	37101543	IC XRA10339
*** TRANSISTORS ***		
Q413	350A1117	TR 2SA1515-T Q
Q545	350C1218	TR 2SB1329-T105 R
⚠Q2002 ⚠Q2004 Q410	350E3218	TR 2SC1740S-T R
Q421 Q502 Q510		
Q523 Q543 Q546		
Q547 Q701 Q702		
Q703 Q782 Q783		
Q922		
Q544	350G1018	TR 2SD2005-T105 R
Q423 Q574 Q932B	350H4417	TR,2SC1473-TA Q
Q932G Q932R		
Q911B Q911G Q911R	350H5017	TR,2SC3811-TA Q
Q412	350J2717	TR 2SC3377-T Q
Q424 ⚠Q570 Q931B	350K5217	TR,2SA1018-TA Q
Q931G Q931R		
⚠Q2001 ⚠Q2003 Q501	350K5718	TR 2SA933S-T R
Q511 Q521 Q524		
Q548 Q573 Q752		
Q781 Q901 Q921		
Q913B Q913G Q913R	35006804	TR,2SA1538-RA D
Q526	35056312	TR 2SC2688 L
⚠Q516	35082401	TR 2SC3486-YB
Q912B Q912G Q912R	35086004	TR,2SC3953-RA D
Q914B Q914G Q914R		
Q403 Q404	351G0556	TR DTA114WS-T
Q405	351G0560	TR DTA144WS-T
Q411 Q420 Q522	351G0601	TR DTC114ES-T
Q540 Q541 Q751		
Q401 Q402 Q431	351G0602	TR DTC144ES-T
Q432 Q433 Q434		
Q435 Q437 Q438		
Q580		
Q512	35121900	TR 2SK752
Q520 Q542	35122100	TR 2SK703
⚠Q551	35122200	TR 2SK854
Q525	35122500	TR 2SK758
⚠Q552	35123000	TR 2SK949
⚠Q549	35124100	TR 2SK1217

SYMBOL	PARTS NO	DESCRIPTION
*** DIODES ***		
ZD751	360A0034	DIODE MTZJ5.1A T-72
ZD510	360A0035	DIODE MTZJ5.1B T-72
ZD401	360A0038	DIODE MTZJ5.6A T-72
⚠ZD508	360A0043	DIODE MTZJ6.2B T-72
ZD561 ZD564	360A0059	DIODE MTZJ9.1B T-72
⚠D2003 ⚠D2004 D2005	360K1027	DI 1SS132 AT52
D406 D407 D410		
D411 D412 D413		
D414 D415 D416		
D509 D510 D511		
D512 D513 D514		
D515 D516 D517		
D518 D529 D530		
D531A D531B D531C		
D532 D533 D535		
D536 D538 D54A		
⚠D546 D548 D550		
D561 D562 D563		
D701B D701G D701R		
D710 D711 D781		
D801 D802 D803		
D804 D805 D806		
D807 D808 D809		
D810 D811 D812		
D813 D814 D815		
D816 D817 D911B	360K1027	DI 1SS132 AT52
D911G D911R D912B		
D912G D912R D913B		
D913G D913R D962		
⚠D523 ⚠D528 D549	360K1032	DIODE 1SS82-TA
D712 D713 D931B		
D931G D931R D961		
⚠ZD2001 ⚠ZD2002	360K3143	DIODE,RD8.2JSB(1)-T4
ZD501	360K3410	DIODE RD8.2JSB(2)/JSAB(2)
ZD2003	360K3605	DIODE RD2.2ESB(1)-T4
ZD506	360K3624	DIODE RD3.9ESB(2)-T4
ZD509	360K3643	DIODE RD6.2ESB(2)-T4
ZD961	360K3647	DIODE RD6.8ESB(2)-T4
ZD520	360K3655	DIODE RD8.2ESB(2)/ESAB(2)
ZD502	360K3671	DIODE RD12ESB(2)/ESAB(2)
ZD503 ZD504 ZD505	360K3677	DIODE RD15ESB-T4
ZD507	360K3679	DIODE RD15ESB(2)-T4
ZD402	360K3692	DIODE RD20ESB(3)-T4
ZD562	360K3792	DIODE MTZ 3.9B T-72
ZD861	360K3804	DIODE MTZ5.1C T-72
ZD563	360K3823	DIODE MTZ 8.2BT-72
D405 D504 D506	361K7160	DIODE TVR-06G G23
D508 D521 D522		
D527 ⚠D541 ⚠D542		
D543 ⚠D544 ⚠D547		
D520	361K7562	DIODE EGP10G G23
D519	36107293	DIODE RK14
D507	36107518	DIODE RG2
⚠D501	36107530	DIODE RS4FS

SYMBOL	PARTS NO	DESCRIPTION
⚠D540	36107560	DIODE RG2A2
D001 D002	36801331	LED SLR-54MT3F/PQ
⚠D2001 ⚠D2002	38005054	VARISTOR MA29W-A

*** TRANSFORMERS ***

SYMBOL	PARTS NO	DESCRIPTION
T501	45803010	TRANS,H.DRIVE
T503	46304107	TRANS,CONVERTER
⚠T504	47105671	F.B.T (SR)
⚠T502	47710013	TRANS,H-OUT

*** VARIABLE RESISTORS ***

SYMBOL	PARTS NO	DESCRIPTION
VR701B VR701G VR701R	410G1151	R,VARIABLE B100H
VR410 VR513	410G1155	R,VARIABLE B470H
VR781	410G1157	R,VARIABLE B1.0K
VR502	410G1159	R,VARIABLE B2.2K
VR411 VR921	410G1161	R,VARIABLE B4.7K
VR420 VR501	410G1163	R,VARIABLE B10K
VR401 VR931B VR931G	410G1165	R,VARIABLE B22K
VR931R		
VR531 VR532 VR533	410G1167	R,VARIABLE B47K
VR535 VR536 VR538		
VR932B VR932G		
VR001 VR002	41011106	R,VARIABLE B10K-V
VR004	41011303	R,VARIABLE B20K-V
VR005	41011310	R,VARIABLE B10K-V
VR006	41011312	R,VARIABLE B500
VR003	41011313	R,VARIABLE B50
VR007	41011314	R,VARIAVLE
VR511	41085009	R,VARIABLE B10K
VR510	41085012	R,VARIABLE B50K
⚠VR2001⚠VR2002	41505005	R,VARIABLE B2K
⚠VR516	41505009	R,VARIABLE B20K

*** RELAYS & SWITCHES ***

SYMBOL	PARTS NO	DESCRIPTION
SW001	653F0031	SWITCH,PUSH BUTTON
	65360027	SWTCH,PUSH BUTTON

*** COILS & FILTERS ***

SYMBOL	PARTS NO	DESCRIPTION
LC701B LC701G LC701R	390J9014	FILTER ZJSC-R33-390TA
R507	39030239	R,NETWORK
⚠L502	60919607	COIL,H.LIN
L504	60999004	COIL,CHOKE
L911B L911R	610E1706	COIL,FILTER 1.2UH
L911G	610E1708	COIL,FILTER 1.8UH
L912G	610E1711	COIL,FILTER 3.3UH
L912B L912R	610E1712	COIL,FILTER 3.9UH
L507	610F3025	COIL,FILTER 47UH
L501	610F7010	COIL,FILTER 2.7UH
L761	610F7025	COIL,FILTER 47UH
L931B L931R	610F8005	COIL,FILTER 1.0UH
L931G	610F8037	COIL,FILTER 0.56UH
	**61062076	POWER LINE FILTER
L506	61064006	COIL,FILTER 50UH
L505	61070127	FILTER CHOKC

SYMBOL	PARTS NO	DESCRIPTION
L509	61070181	COIL,CHOKE PJ87-102K
DG	61315203	COIL,DEGAUSSING
LC961	616J9003	NOISE FILTER ZJSC-2R2-101
LC501 L508	616K5101	INDUCTOR,BEADS
LC911B LC911G LC911R	616K6027	NOISE FILTER 2A222-TA
LC861 LC862 LC962	616K6028	NOISE FILTER 1H223X-TA
LC963	616K6029	NOISE FILTER
LC401	616K6718	NOISE FILTER

*** PWB ASSYS ***

SYMBOL	PARTS NO	DESCRIPTION
	84N41CH3	PACKING, SUB PWB ASSY
	84N41DH4	PACKING, MAIN PWB ASSY

*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

SYMBOL	PARTS NO	DESCRIPTION
SW-PS	**31104020	SW.REG.UNIT (SMP-120BB-1)
HS402	31709202	SHEET,INSULATOR
HS516 HS549	31709503	SHEET,INSULATOR
SG931B SG931G SG931R	32990047	ARRESTER
SG951		
X801	64098039	X'TAL(10.000MHZ)
SG952	66706002	SPARK GAP 1.5KV
⚠CN-CRT	70032055	CRT SOCKET(HPS0199)
CORD	70800324	LINE,POWER
CABLE	**73893101	CABLE SIGNAL MD15P-11P-BK
VR2001 VR2002 VR516	74004891	CAP

*** APPEARANCE PARTS ***

SYMBOL	PARTS NO	DESCRIPTION
	**25313791	CABINET BACK ASSY
	**25313821	CABINET BOTTOM
	**25314111	CABINET FRONT ASSY
	**25419001	REVOLVING STAND ASSY
	**25419021	REVOLVING SPINDLE
	25419841	LID,CONTROL ASSY
	25534631	COIL SPRING
	25607291	SLIDE SHEET
	**25757643	LABEL(REV.)
	**25775942	NAME PLATE,INSTRUCTION

*** KNOBS & PUSH BUTTONS ***

SYMBOL	PARTS NO	DESCRIPTION
	25454671	PUSH BUTTON (SW)
	**25454681	KNOB CONTROL

*** PRINTED & PACKING MATERIALS ***

SYMBOL	PARTS NO	DESCRIPTION
	**24813191	BAG,POLYETHYLENE(150*370)
	**25775751	LABEL (EE)
	**25823181	FILLER (T) CARTON
	**25823192	FILLER (B) CARTON
	**25823751	CARTON BOX (JC-1521HMB)
	**25825621	SHEET, PROTECTION
	**78034406	MONITOR SALES OFFICE LIST
	**78125683	USER'S MANUAL JC-1521HMB
	599910331	S/M JC-1521HMB/B(EE)/ R(N),(H)

*** RESISTORS ***

SYMBOL	PARTS NO	DESCRIPTION
R001	401C6665	R,CARBON 470H 5% 1/4W
⚠R5D6	401C6673	R,CARBON 1.0K 5% 1/4W
R5B0	401C6685	R,CARBON 3.3K 5% 1/4W
R571	401H5601	R,CARBON 1.0H 5% 1/2W
R570	401H5603	R,CARBON 1.2H 5% 1/2W
R5C2	401H5617	R,CARBON 4.7H 5% 1/2W
R937B R937G R937R	401H5641	R,CARBON 47H 5% 1/2W
R913B R913G R913R	401H5643	R,CARBON 56H 5% 1/2W
R914B R914G R914R	401H5645	R,CARBON 68H 5% 1/2W
R951	401H5649	R,CARBON 100H 5% 1/2W
R429 R961	401H5661	R,CARBON 330H 5% 1/2W
R759	401H5669	R,CARBON 680H 5% 1/2W
R553	401H5681	R,CARBON 2.2K 5% 1/2W
R952	401H5689	R,CARBON 4.7K 5% 1/2W
R5D7	401J9820	RD16Z,0H,AT52
R702B R702G R702R	401K5641	R,CARBON 47H 5% 1/6W
R5B7 R5B8 R912B	401K5647	R,CARBON 82H 5% 1/6W
R912G R912R		
⚠R2003 ⚠R2007 R5C4	401K5649	R,CARBON 100H 5% 1/6W
R529 R576 R704B		
R704G R704R R708B		
R708G R708R R788	401K5649	R,CARBON 100H 5% 1/6W
R911B R911G R911R		
R701B R701G R701R	401K5653	R,CARBON 150H 5% 1/6W
R403 R404 R405	401K5657	R,CARBON 220H 5% 1/6W
R50A R504 R757		
R804 R805 R806		
R807 R808 R810		
R811 R813		
R447 R801 R925	401K5661	R,CARBON 330H 5% 1/6W
R707B R707G R707R	401K5663	R,CARBON 390H 5% 1/6W
R938G		
R442 R497 R706B	401K5665	R,CARBON 470H 5% 1/6W
R706G R706R		
R752	401K5667	R,CARBON 560H 5% 1/6W
R915B R915G	401K5671	R,CARBON 820H 5% 1/6W
R407 R415 R416	401K5673	R,CARBON 1.0K 5% 1/6W
R434 R448 R5D9		
R5E9 R5F4 R5F8		
R526 R533 R536		
R538 R550 R552		
R705B R705G R705R		
R756 R781 R785		
R792 R901 R924		
R432 R436 R438	401K5675	R,CARBON 1.2K 5% 1/6W
R427 R433 R441	401K5677	R,CARBON 1.5K 5% 1/6W
R780		
R53B R915R R938B	401K5679	R,CARBON 1.8K 5% 1/6W
R2014 R401 R5F0	401K5681	R,CARBON 2.2K 5% 1/6W
R784 R926 R938R		
R406 R443 R535	401K5683	R,CARBON 2.7K 5% 1/6W
R786		
⚠R2011 ⚠R2013 R5A3	401K5685	R,CARBON 3.3K 5% 1/6W
R921 R923 R927		
R587 R731 R755	401K5687	R,CARBON 3.9K 5% 1/6W
R922		
R437 R522 R532	401K5689	R,CARBON 4.7K 5% 1/6W

SYMBOL	PARTS NO	DESCRIPTION
R736 R928		
R5A8 R5D4 R5EA	401K5691	R,CARBON 5.6K 5% 1/6W
R580 R782		
R5F3 R591 R732	401K5693	R,CARBON 6.8K 5% 1/6W
R783		
⚠R2010 ⚠R2012 R524	401K5695	R,CARBON 8.2K 5% 1/6W
R585 R787 R903		
⚠R2004 ⚠R2008 R402	401K5697	R,CARBON 10K 5% 1/6W
R412 R445 R5A0		
R5A2 R5A6 R5A9		
⚠R5CA R5C0 ⚠R5E0		
⚠R5E3 R5E6 R5E7		
R5H0 R5H1 R502		
R503 R506 R530		
R578 R583 R593		
R598 R703B R703G		
R703R R734 R754		
R802 R803		
R002 ⚠R2002 ⚠R2006	401K5699	R,CARBON 12K 5% 1/6W
R518 R521 R531		
R421 R47A R5A7	401K5701	R,CARBON 15K 5% 1/6W
R581 R592		
R751 R935B R935G	401K5703	R,CARBON 18K 5% 1/6W
R935R		
R423 R5B6 R520	401K5705	R,CARBON 22K 5% 1/6W
R523 R542 R545		
R55A R584		
⚠R2001 ⚠R2005 R546	401K5707	R,CARBON 27K 5% 1/6W
R411 R424 R493	401K5709	R,CARBON 33K 5% 1/6W
R5CB R525 R586		
R735 R789 R934B		
R934G R934R		
R5B1 R5B2 ⚠R5C8	401K5711	R,CARBON 39K 5% 1/6W
R422 R435 R494	401K5713	R,CARBON 47K 5% 1/6W
R495 R5E8 R53A		
R543 R544 R594		
R595 R597		
R547	401K5715	R,CARBON 56K 5% 1/6W
R936G	401K5717	R,CARBON 68K 5% 1/6W
R936B	401K5719	R,CARBON 82K 5% 1/6W
R492 R499 R5E5	401K5721	R,CARBON 100K 5% 1/6W
R5F5 R548 R596		
R5F2	401K5723	R,CARBON 120K 5% 1/6W
R933B R933G R933R	401K5727	R,CARBON 180K 5% 1/6W
R931B R931G R931R	401K5729	R,CARBON 220K 5% 1/6W
⚠R5E4 R932B R932G	401K5731	R,CARBON 270K 5% 1/6W
R932R		
R582	401K5737	R,CARBON 470K 5% 1/6W
R472 R491	401K5739	R,CARBON 560K 5% 1/6W
R498	401K5743	R,CARBON 820K 5% 1/6W
R480 R5A4 R5B5	401K5745	R,CARBON 1.0M 5% 1/6W
⚠R5H2 R733 R814		
R540	40107197	R,CARBON 10K 5% 1/6W
⚠R917B ⚠R917G ⚠R917R	40177133	R,CARBON 22H 5% 1/4W
⚠R918B ⚠R918G ⚠R918R		
⚠R572	403F1149	R,METAL OXIDE 100H 5% 1W
R562	403F1161	R,METAL 330H 5% 1W
R588	403F1175	R,METAL OXIDE 1.2K 5% 1W

SYMBOL	PARTS NO	DESCRIPTION
R425	403F2103	R,METAL OXIDE 1.2H 5% 2W
R589	403F2133	R,METAL OXIDE 22H 5% 2W
R861	403F2141	R,METAL OXIDE 47H 5% 2W
⚠R5D0	403F2163	R,METAL OXIDE 390H 5% 2W
R431	403F3147	R,METAL OXIDE 82H 5% 3W
R557	403F3169	R,METAL OXIDE 680H 5% 3W
R558	403F3171	R,METAL OXIDE 820H 5% 3W
R916B R916G	40318273	R,METAL 1.0K 5% 7W
R916R	40318998	R,METAL 1.0K 5% 7W
⚠R5E1	40372109	R,METAL 2.2H 5% 2W
R513	404C1681	R,METAL 2.2K 1% 1/6W
R514	404C1683	R,METAL 2.7K 1% 1/6W
R510	404C1687	R,METAL 3.9K 1% 1/6W
R539	404C1695	R,METAL 8.2K 1% 1/6W
R511 R753 R790	404C1697	R,METAL 10K 1% 1/6W
R457	404C1700	R,METAL 13K 1% 1/6W
R439 R473 R483	404C1701	R,METAL 15K 1% 1/6W
R512 R527		
R451 R487 R528	404C1702	R,METAL 16K 1% 1/6W
R410 R476 R484	404C1703	R,METAL 18K 1% 1/6W
R409	404C1704	R,METAL 20K 1% 1/6W
R420 R471 R479	404C1707	R,METAL 27K 1% 1/6W
R452 R454	404C1709	R,METAL 33K 1% 1/6W
R496	404C1711	R,METAL 39K 1% 1/6W
R408 R458	404C1714	R,METAL 51K 1% 1/6W
R791	404C1715	R,METAL 56K 1% 1/6W
R477 R478	404C1717	R,METAL 68K 1% 1/6W
R474 R475	404C1718	R,METAL 75K 1% 1/6W
R936R	404C1720	R,METAL 91K 1% 1/6W
R482	404C1721	R,METAL 100K 1% 1/6W
R453	404C1723	R,METAL 120K 1% 1/6W
R515 R517	404C1725	R,METAL 150K 1% 1/6W
R486	404C1726	R,METAL 160K 1% 1/6W
R455 R470 R516	404C1727	R,METAL 180K 1% 1/6W
R5D2	404C1731	R,METAL 270K 1% 1/6W
R481 R485 R490	404C1733	R,METAL 330K 1% 1/6W
R519		
R509	404C1739	R,METAL 560K 1% 1/6W
⚠R5C5 ⚠R5C6 ⚠R5C7	404K5109	R,METAL 2.2H 5% 1/4W
⚠R430	404K5117	R,METAL 4.7H 5% 1/4W
⚠R5C1 ⚠R551	404K5133	R,METAL 22H 5% 1/4W
⚠R760	404K5149	R,METAL 100H 5% 1/4W
⚠R465A	404K5345	R,METAL 1.0H 5% 1/4W
⚠R5D1	40405109	R,METAL 2.2H 5% 1/4W
⚠R5B9	40406101	R,METAL 1.0H 5% 1/2W
R561	40406169	R,METAL 680H 5% 1/2W
⚠R461 ⚠R590	409A6125	R,FUSE 10H 5% 1/4W

*** CAPACITORS ***

C520 C541	420C9560	C,CERAMIC 500V 560PF
C557 C931B C931G	420C9563	C,CERAMIC 500V 1000PF
C931R		
C5A2 ⚠C525	420C9565	C,CERAMIC 500V 1500PF
C932B C932G C932R	420C9567	C,CERAMIC 500V 2200PF

SYMBOL	PARTS NO	DESCRIPTION
C962		
C559 C914B C914G	420C9569	C,CERAMIC 50V 3300PF
C914R		
C951	420DK108	C,CERAMIC 2KV 10000PF
C431 C5B0 C5B1	421A0425	C,CERAMIC 50V 0.01UF
C5B3 C5B4 C530		
C763		
C401	421C0208	C,CERAMIC 50V 390PF
C916B C916G C916R	421C0209	C,CERAMIC 50V 470PF
C5C2	421C0210	C,CERAMIC 50V 560PF
C551 C757 C804	421C0213	C,CERAMIC 50V 1000PF
C462 C512 C549	421D6009	C,CERAMIC 25V 0.1UF
C564 C702B C702G		
C702R C752 C753		
C754 C762 C766	421D6009	C,CERAMIC 25V 0.1UF
C767 C768 C784		
C803 C861 C863		
C864 C865 C901		
C911B C911G C911R		
C921 C964 C965		
C423 C562 C782	421D6013	C,CERAMIC 50V 0.1UF
C783		
C703B C703G C703R	423A1033	C,CERAMIC 50V 33PF
C413	423A1053	C,CERAMIC 50V 220PF
C801 C802	423A2025	C,CERAMIC 50V 15PF
C732 C756	423A2031	C,CERAMIC 50V 27PF
C537	423A2037	C,CERAMIC 50V 47PF
C502 C912B C912G	423A2045	C,CERAMIC 50V 100PF
C912R		
C504	423A2105	C,CERAMIC 50V 270PF
C505	427F4607	C,FILM 50V 3300PF
C507 C540	427F4613	C,FILM 50V 0.01UF
C404	427F4615	C,FILM 50V 0.015UF
C434	427F4623	C,FILM 50V 0.068UF
C422 C425	427F4625	C,FILM 50V 0.1UF
C424	427F4629	C,FILM 50V 0.22UF
C503	427F4647	C,FILM 50V 470PF
C534 C535 C546	427F4651	C,FILM 50V 1000PF
C533	427F4655	C,FILM 50V 2200PF
C536 C552	427F4663	C,FILM 50V 0.01UF
C755	427F4669	C,FILM 50V 0.033UF
⚠C583	427F4673	C,FILM 50V 0.068UF
C592	427F4675	C,FILM 50V 0.1UF
C509	427F8404	C,FILM 100V 1800PF
C532	42703663	C,FILM 400V 0.01UF
⚠C572	42703865	C,FILM 400V 0.015UF
C731	4276D213	C,MYLAR 200V 0.01UF
C403 C410	428B3025	C,METAL FILM 50V 1.0UF
⚠C570	42807514	C,FILM 1.6KV 3600PF
⚠C523	42807517	C,FILM 1.6KV 4700PF
⚠C571	42808589	C,METAL FILM 1.6KV 7400PF
⚠C526	42839613	C,METAL 400V 0.56UF
⚠C529	42839655	C,METAL 200V 0.22UF
C915B C915G C915R	42840097	C,FILM 250V 0.22UF

SYMBOL	PARTS NO	DESCRIPTION
⚠C524	42899914	C,METAL FILM 400V 0.18UF
C416	430BF047	C,ELEC 25V 2200UF
C913B C913G C913R	430B3182	C,ELEC 160V 1.0UF
C5C0 C5C1	430B6017	C,ELEC 10V 220UF
C862 C902	430B6029	C,ELEC 16V 100UF
C566	430B6032	C,ELEC 16V 470UF
C5A0 C765	430B6053	C,ELEC 35V 47UF
C417	430B6054	C,ELEC 35V 100UF
⚠C585	430B6055	C,ELEC 35V 220UF
C555	430B6057	C,ELEC 35V 470UF
C415 C420 C432 C510 C511 C550	430B6061	C,ELEC 50V 1.0UF
C421 C5C3	430B6064	C,ELEC 50V 4.7UF
C5A6 C542 C543 C544 C545 ⚠C581 ⚠C593	430B6065	C,ELEC 50V 10UF
C538 ⚠C578 ⚠C586 ⚠C589	430B6068	C,ELEC 50V 47UF
C441 C558	430B6512	C,ELEC 160V 1.0UF
C5A1 C568 C966	430B6556	C,ELEC 250V 10UF
C576	430B8177	C,ELEC 50V 3.3UF
⚠C579	430B9016	C,ELEC 10V 100UF
⚠C2001	430B9017	C,ELEC 10V 220UF
⚠C2002	430B9019	C,ELEC 10V 470UF
C701B C701G C701R C751	430B9025	C,ELEC 16V 10UF
C567	430B9029	C,ELEC 16V 100UF
C461 C522	430B9030	C,ELEC 16V 220UF
C563 C761	430B9032	C,ELEC 16V 470UF
C465	430B9033	C,ELEC 16V 1000UF
C961 C963	430B9041	C,ELEC 25V 47UF
C561	430B9042	C,ELEC 25V 100UF
C553	430B9043	C,ELEC 25V 220UF
C411 C412	430B9054	C,ELEC 35V 100UF
C506 C508	430B9061	C,ELEC 50V 1.0UF
C419	430B9062	C,ELEC 50V 2.2UF
C426	430B9066	C,ELEC 50V 22UF
C402	430B9221	C,ELEC 50V 0.1UF
C548	430B9536	C,ELEC 200V 10UF
C565	430B9556	C,ELEC 250V 10UF
⚠C580	4309H060	C,ELEC 250V 3.3UF
⚠C582	433A3033	C,ELEC 25V 10UF
C427	433A3043	C,ELEC 35V 4.7UF
C781	433J9021	C,ELEC 25V 10UF
C501	4339J021	C,ELEC 25V 10UF

REPLACEMENT PARTS LIST

The components specified for Model JC-1521HMR(N).

Notes: The components identified by ⚠ mark are critical for safety.
Replace only with parts Number specified.

SYMBOL	PARTS NO	DESCRIPTION
*** CRT & TUNER ***		
⚠CRT	33015520	CRT M36KME23XX23(T3)(R)
*** ICS ***		
⚠IC504	370A1009	IC UPC1093J-T (REG)
IC502	37005182	IC LM7812CT(REG)
IC752	37011018	IC UPC311C (COMP)
IC403 IC404 IC501	37011210	IC XRA10324 (Q OP-AMP)
IC505 IC506		
⚠IC401	37056494	IC LA7853
IC402	37056689	IC LA7837
IC751	37056846	IC LM1203N
IC801	37056853	MOS PCZ80-145
IC503	37101543	IC XRA10339
*** TRANSISTORS ***		
Q413	350A1117	TR 2SA1515-T Q
Q545	350C1218	TR 2SB1329-T105 R
⚠Q2002 ⚠Q2004 Q410	350E3218	TR 2SC1740S-T R
Q421 Q502 Q510		
Q523 Q543 Q546		
Q547 Q701 Q702		
Q703 Q782 Q783		
Q922		
Q544	350G1018	TR 2SD2005-T105 R
Q423 Q574 Q932B	350H4417	TR,2SC1473-TA Q
Q932G Q932R		
Q911B Q911G Q911R	350H5017	TR,2SC3811-TA Q
Q412	350J2717	TR 2SC3377-T Q
Q424 ⚠Q570 Q931B	350K5217	TR,2SA1018-TA Q
Q931G Q931R		
⚠Q2001 ⚠Q2003 Q501	350K5718	TR 2SA933S-T R
Q511 Q521 Q524		
Q548 Q573 Q752		
Q781 Q901 Q921		
Q913B Q913G Q913R	35006804	TR,2SA1538-RA D
Q526	35056312	TR 2SC2688 L
⚠Q516	35082401	TR 2SC3486-YB
Q912B Q912G Q912R	35086004	TR,2SC3953-RA D
Q914B Q914G Q914R		
Q403 Q404	351G0556	TR DTA114WS-T
Q405	351G0560	TR DTA144WS-T
Q411 Q420 Q522	351G0601	TR DTC114ES-T
Q540 Q541 Q751		
Q401 Q402 Q431	351G0602	TR DTC144ES-T
Q432 Q433 Q434		
Q435 Q437 Q438		
Q580		
Q512	35121900	TR 2SK752
Q520 Q542	35122100	TR 2SK703
⚠Q551	35122200	TR 2SK854
Q525	35122500	TR 2SK758
⚠Q552	35123000	TR 2SK949
⚠Q549	35124100	TR 2SK1217

SYMBOL	PARTS NO	DESCRIPTION
*** DIODES ***		
ZD751	360A0034	DIODE MTZJ5.1A T-72
ZD510	360A0035	DIODE MTZJ5.1B T-72
ZD401	360A0038	DIODE MTZJ5.6A T-72
⚠ZD508	360A0043	DIODE MTZJ6.2B T-72
ZD561 ZD564	360A0059	DIODE MTZJ9.1B T-72
⚠D2003 ⚠D2004 D2005	360K1027	DI 1SS132 AT52
D406 D407 D410		
D411 D412 D413		
D414 D415 D416		
D509 D510 D511		
D512 D513 D514		
D515 D516 D517		
D518 D529 D530		
D531A D531B D531C		
D532 D533 D535		
D536 D538 D54A		
⚠D546 D548 D550		
D561 D562 D563		
D701B D701G D701R		
D710 D711 D781		
D801 D802 D803		
D804 D805 D806		
D807 D808 D809		
D810 D811 D812		
D813 D814 D815		
D816 D817 D911B	360K1027	DI 1SS132 AT52
D911G D911R D912B		
D912G D912R D913B		
D913G D913R D962		
⚠D523 ⚠D528 D549	360K1032	DIODE 1SS82-TA
D712 D713 D931B		
D931G D931R D961		
⚠ZD2001 ⚠ZD2002	360K3143	DIODE,RD8.2JSB(1)-T4
ZD501	360K3410	DIODE RD8.2JSB(2)/JSAB(2)
ZD2003	360K3605	DIODE RD2.2ESB(1)-T4
ZD506	360K3624	DIODE RD3.9ESB(2)-T4
ZD509	360K3643	DIODE RD6.2ESB(2)-T4
ZD961	360K3647	DIODE RD6.8ESB(2)-T4
ZD520	360K3655	DIODE RD8.2ESB(2)/ESAB(2)
ZD502	360K3671	DIODE RD12ESB(2)/ESAB(2)
ZD503 ZD504 ZD505	360K3677	DIODE RD15ESB-T4
ZD507	360K3679	DIODE RD15ESB(2)-T4
ZD402	360K3692	DIODE RD20ESB(3)-T4
ZD562	360K3792	DIODE MTZ 3.9B T-72
ZD861	360K3804	DIODE MTZ5.1C T-72
ZD563	360K3823	DIODE MTZ 8.2BT-72
D405 D504 D506	361K7160	DIODE TVR-06G G23
D508 D521 D522		
D527 ⚠D541 ⚠D542		
D543 ⚠D544 ⚠D547		
D520	361K7562	DIODE EGP10G G23
D519	36107293	DIODE RK14
D507	36107518	DIODE RG2
⚠D501	36107530	DIODE RS4FS
⚠D540	36107560	DIODE RG2A2

SYMBOL	PARTS NO	DESCRIPTION
D001 D002	36801331	LED SLR-54MT3F/PQ
⚠D2001 ⚠D2002	38005054	VARISTOR MA29W-A

*** TRANSFORMERS ***

SYMBOL	PARTS NO	DESCRIPTION
T501	45803010	TRANS,H.DRIVE
T503	46304107	TRANS,CONVERTER
⚠T504	47105671	F.B.T (SR)
⚠T502	47710013	TRANS,H-OUT

*** VARIABLE RESISTORS ***

SYMBOL	PARTS NO	DESCRIPTION
VR701B VR701G VR701R	410G1151	R,VARIABLE B100H
VR410 VR513	410G1155	R,VARIABLE B470H
VR781	410G1157	R,VARIABLE B1.0K
VR502	410G1159	R,VARIABLE B2.2K
VR411 VR921	410G1161	R,VARIABLE B4.7K
VR420 VR501	410G1163	R,VARIABLE B10K
VR401	410G1165	R,VARIABLE B22K
VR931B VR931G VR931R	410G1166	R,VARIABLE B33K
VR531 VR532 VR533	410G1167	R,VARIABLE B47K
VR535 VR536 VR538		
VR932B VR932G		
VR001 VR002	41011106	R,VARIABLE B10K-V
VR004	41011303	R,VARIABLE B20K-V
VR005	41011310	R,VARIABLE B10K-V
VR006	41011312	R,VARIABLE B500
VR003	41011313	R,VARIABLE B50
VR007	41011314	R,VARIAVLE
VR511	41085009	R,VARIABLE B10K
VR510	41085012	R,VARIABLE B50K
⚠VR2001 ⚠VR2002	41505005	R,VARIABLE B2K
⚠VR516	41505009	R,VARIABLE B20K

*** RELAYS & SWITCHES ***

SYMBOL	PARTS NO	DESCRIPTION
SW001	653F0031	SWITCH,PUSH BUTTON
	65360027	SWTCH,PUSH BUTTON

*** COILS & FILTERS ***

SYMBOL	PARTS NO	DESCRIPTION
LC701B LC701G LC701R	390J9014	FILTER ZJSC-R33-390TA
R507	39030239	R,NETWORK
⚠L502	60919117	COIL,H.LIN
L504	60999004	COIL,CHOKE
L911B L911R	610E1706	COIL,FILTER 1.2UH
L911G	610E1708	COIL,FILTER 1.8UH
L912G	610E1711	COIL,FILTER 3.3UH
L912B L912R	610E1712	COIL,FILTER 3.9UH
L507	610F3025	COIL,FILTER 47UH
L501	610F7010	COIL,FILTER 2.7UH
L761	610F7025	COIL,FILTER 47UH
L931B L931R	610F8005	COIL,FILTER 1.0UH
L931G	610F8037	COIL,FILTER 0.56UH
	61062076	POWER LINE FILTER
L506	61064006	COIL,FILTER 50UH
L505	61070127	FILTER CHOKC
L509	61070181	COIL,CHOKE PJ87-102K

SYMBOL	PARTS NO	DESCRIPTION
	61315203	COIL,DEGAUSSING
LC961	616J9003	NOISE FILTER ZJSC-2R2-101
LC501 L508	616K5101	INDUCTOR,BEADS
LC911B LC911G LC911R	616K6027	NOISE FILTER 2A222-TA
LC861 LC862 LC962	616K6028	NOISE FILTER 1H223X-TA
LC963	616K6029	NOISE FILTER
LC401	616K6718	NOISE FILTER

*** PWB ASSYS ***

SYMBOL	PARTS NO	DESCRIPTION
	84N59C02	SUB PWB ASSY (B-1)
	84N59D04	MAIN PWB ASSY (B-1)

*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

SYMBOL	PARTS NO	DESCRIPTION
SW-PS	31104020	SW.REG.UNIT (SMP-120BB-1)
HS402	31709202	SHEET,INSULATOR
HS516 HS549	31709503	SHEET,INSULATOR
SG931B SG931G SG931R	32990047	ARRESTER
SG951		
X801	64098039	X'TAL(10.000MHZ)
SG952	66706002	SPARK GAP 1.5KV
⚠CN-CRT	70032055	CRT SOCKET(HPS0199)
CABLE	73893102	CABLE SIGNAL MD15P-11P-BJ
VR2001 VR2002 VR516	74004891	CAP
CORD	75513033	LINE CORD

*** APPEARANCE PARTS ***

SYMBOL	PARTS NO	DESCRIPTION
	25313791	CABINET BACK ASSY
	25313821	CABINET BOTTOM
	25314111	CABINET FRONT ASSY
	25419001	REVOLVING STAND ASSY
	25419021	REVOLVING SPINDLE
	25419841	LID,CONTROL ASSY
	25534631	COIL SPRING
	25607291	SLIDE SHEET
	25757643	LABEL(REV.)
	25775171	NAME PLATE,INSTRUCTION

*** KNOBS & PUSH BUTTONS ***

SYMBOL	PARTS NO	DESCRIPTION
	25454671	PUSH BUTTON (SW)
	25454681	KNOB CONTROL

*** PRINTED & PACKING MATERIALS ***

SYMBOL	PARTS NO	DESCRIPTION
	24813191	BAG,POLYETHYLENE(150*370)
	25823181	FILLER (T) CARTON
	25823192	FILLER (B) CARTON
	25823761	CARTON BOX (JC-1521HMR)
	25825501	SHEET, PROTECTION
	78034406	MONITOR SALES OFFICE LIST
	78043392	WARRANTY CARD
	78125683	USER'S MANUAL JC-1521HMB
	599910331	S/M JC-1521HMB/B(EE)/ R(N),(H)

*** RESISTORS ***

SYMBOL			PARTS NO	DESCRIPTION
R001			401C6665	R,CARBON 470H 5% 1/4W
⚠R5D6			401C6673	R,CARBON 1.0K 5% 1/4W
R5B0			401C6685	R,CARBON 3.3K 5% 1/4W
R571			401H5601	R,CARBON 1.0H 5% 1/2W
R570			401H5603	R,CARBON 1.2H 5% 1/2W
R5C2			401H5617	R,CARBON 4.7H 5% 1/2W
R937B	R937G	R937R	401H5641	R,CARBON 47H 5% 1/2W
R913B	R913G	R913R	401H5643	R,CARBON 56H 5% 1/2W
R914B	R914G	R914R	401H5645	R,CARBON 68H 5% 1/2W
R951			401H5649	R,CARBON 100H 5% 1/2W
R429			401H5659	R,CARBON 270H 5% 1/2W
R961			401H5661	R,CARBON 330H 5% 1/2W
R759			401H5669	R,CARBON 680H 5% 1/2W
R553			401H5681	R,CARBON 2.2K 5% 1/2W
R952			401H5689	R,CARBON 4.7K 5% 1/2W
R5D7			401J9820	RD16Z,0H,AT52
R702B	R702G	R702R	401K5641	R,CARBON 47H 5% 1/6W
R5B7	R5B8	R912B	401K5647	R,CARBON 82H 5% 1/6W
R912G	R912R		401K5647	R,CARBON 82H 5% 1/6W
⚠R2003	⚠R2007	R5C4	401K5649	R,CARBON 100H 5% 1/6W
R529	R576	R704B		
R704G	R704R	R708B		
R708G	R708R	R788		
R911B	R911G	R911R		
R701B	R701G	R701R	401K5653	R,CARBON 150H 5% 1/6W
R403	R404	R405	401K5657	R,CARBON 220H 5% 1/6W
R50A	R504	R757		
R804	R805	R806		
R807	R808	R810		
R811	R813			
R447	R801	R925	401K5661	R,CARBON 330H 5% 1/6W
R707B	R707G	R707R	401K5663	R,CARBON 390H 5% 1/6W
R938G				
R442	R497	R706B	401K5665	R,CARBON 470H 5% 1/6W
R706G	R706R			
R752			401K5667	R,CARBON 560H 5% 1/6W
R915B	R915G		401K5671	R,CARBON 820H 5% 1/6W
R407	R415	R416	401K5673	R,CARBON 1.0K 5% 1/6W
R434	R448	R5D9		
R5E9	R5F4	R5F8		
R526	R533	R536		
R538	R550	R552		
R705B	R705G	R705R		
R756	R781	R785		
R792	R901	R924		
R432	R436	R438	401K5675	R,CARBON 1.2K 5% 1/6W
R427	R433	R441	401K5677	R,CARBON 1.5K 5% 1/6W
R780				
R53B	R915R	R938B	401K5679	R,CARBON 1.8K 5% 1/6W
R2014	R401	R5F0	401K5681	R,CARBON 2.2K 5% 1/6W
R784	R926	R938R		
R406	R443	R535	401K5683	R,CARBON 2.7K 5% 1/6W
R786				
⚠R2011	⚠R2013	R5A3	401K5685	R,CARBON 3.3K 5% 1/6W
R921	R923	R927		
R587	R731	R755	401K5687	R,CARBON 3.9K 5% 1/6W
R922				

SYMBOL			PARTS NO	DESCRIPTION
R437	R522	R532	401K5689	R,CARBON 4.7K 5% 1/6W
R736	R928			
R5A8	R5D4	R5EA	401K5691	R,CARBON 5.6K 5% 1/6W
R580	R782			
R5F3	R591	R732	401K5693	R,CARBON 6.8K 5% 1/6W
R783				
⚠R2010	⚠R2012	R524	401K5695	R,CARBON 8.2K 5% 1/6W
R585	R787	R903		
⚠R2004	⚠R2008	R402	401K5697	R,CARBON 10K 5% 1/6W
R412	R445	R5A0		
R5A2	R5A6	R5A9		
⚠R5CA	R5C0	⚠R5E0		
⚠R5E3	R5E6	R5E7		
R5H0	R5H1	R502		
R503	R506	R530		
R578	R583	R593		
R598	R703B	R703G		
R703R	R734	R754		
R802	R803			
R002	⚠R2002	⚠R2006	401K5699	R,CARBON 12K 5% 1/6W
R518	R521	R531		
R421	R43A	R47A	401K5701	R,CARBON 15K 5% 1/6W
R5A7	R581	R592		
R751	R935B	R935G	401K5703	R,CARBON 18K 5% 1/6W
R935R				
R423	R5B6	R520	401K5705	R,CARBON 22K 5% 1/6W
R523	R542	R545		
R55A	R584			
⚠R2001	⚠R2005	R546	401K5707	R,CARBON 27K 5% 1/6W
R411	R424	R493	401K5709	R,CARBON 33K 5% 1/6W
R5CB	R525	R586		
R735	R789	R934B		
R934G	R934R			
R5B1	R5B2	⚠R5C8	401K5711	R,CARBON 39K 5% 1/6W
R422	R435	R494	401K5713	R,CARBON 47K 5% 1/6W
R495	R5E8	R53A		
R543	R544	R594		
R595	R597			
R547			401K5715	R,CARBON 56K 5% 1/6W
R936G			401K5717	R,CARBON 68K 5% 1/6W
R936B			401K5719	R,CARBON 82K 5% 1/6W
R492	R499	R5E5	401K5721	R,CARBON 100K 5% 1/6W
R5F5	R548	R596		
R5F2			401K5723	R,CARBON 120K 5% 1/6W
R933B	R933G	R933R	401K5727	R,CARBON 180K 5% 1/6W
R931B	R931G	R931R	401K5729	R,CARBON 220K 5% 1/6W
⚠R5E4	R932B	R932G	401K5731	R,CARBON 270K 5% 1/6W
R932R				
R582			401K5737	R,CARBON 470K 5% 1/6W
R472	R491		401K5739	R,CARBON 560K 5% 1/6W
R498			401K5743	R,CARBON 820K 5% 1/6W
R480	R5A4	R5B5	401K5745	R,CARBON 1.0M 5% 1/6W
⚠R5H2	R733	R814		
R540			40107197	R,CARBON 10K 5% 1/6W
⚠R917B	⚠R917G	⚠R917R	40177133	R,CARBON 22H 5% 1/4W
⚠R918B	⚠R918G	⚠R918R		
R562			403F1161	R,METAL 330H 5% 1W
R588			403F1175	R,METAL OXIDE 1.2K 5% 1W
R425			403F2103	R,METAL OXIDE 1.2H 5% 2W

SYMBOL	PARTS NO	DESCRIPTION
R589	403F2133	R,METAL OXIDE 22H 5% 2W
⚠R572 R861	403F2141	R,METAL OXIDE 47H 5% 2W
⚠R5D0	403F2163	R,METAL OXIDE 390H 5% 2W
R431	403F3147	R,METAL OXIDE 82H 5% 3W
R557	403F3169	R,METAL OXIDE 680H 5% 3W
R558	403F3171	R,METAL OXIDE 820H 5% 3W
R916B R916G	40318273	R,METAL 1.0K 5% 7W
R916R	40318998	R,METAL 1.0K 5% 7W
⚠R5E1	40372109	R,METAL 2.2H 5% 2W
R513	404C1681	R,METAL 2.2K 1% 1/6W
R514	404C1683	R,METAL 2.7K 1% 1/6W
R510	404C1687	R,METAL 3.9K 1% 1/6W
R539	404C1695	R,METAL 8.2K 1% 1/6W
R511 R753 R790	404C1697	R,METAL 10K 1% 1/6W
R457	404C1700	R,METAL 13K 1% 1/6W
R439 R473 R483	404C1701	R,METAL 15K 1% 1/6W
R487 R512 R527		
R451 R484 R528	404C1702	R,METAL 16K 1% 1/6W
R410 R476	404C1703	R,METAL 18K 1% 1/6W
R409	404C1704	R,METAL 20K 1% 1/6W
R420 R471 R479	404C1707	R,METAL 27K 1% 1/6W
R452 R454	404C1709	R,METAL 33K 1% 1/6W
R496	404C1711	R,METAL 39K 1% 1/6W
R408 R458	404C1714	R,METAL 51K 1% 1/6W
R791	404C1715	R,METAL 56K 1% 1/6W
R477 R478	404C1717	R,METAL 68K 1% 1/6W
R474 R475	404C1718	R,METAL 75K 1% 1/6W
R936R	404C1720	R,METAL 91K 1% 1/6W
R482	404C1721	R,METAL 100K 1% 1/6W
R453	404C1723	R,METAL 120K 1% 1/6W
R515 R517	404C1725	R,METAL 150K 1% 1/6W
R486	404C1726	R,METAL 160K 1% 1/6W
R455 R470 R516	404C1727	R,METAL 180K 1% 1/6W
R5D2	404C1731	R,METAL 270K 1% 1/6W
R481 R485 R490	404C1733	R,METAL 330K 1% 1/6W
R519		
R509	404C1739	R,METAL 560K 1% 1/6W
⚠R5C5 ⚠R5C6 ⚠R5C7	404K5109	R,METAL 2.2H 5% 1/4W
⚠R430	404K5117	R,METAL 4.7H 5% 1/4W
⚠R5C1 ⚠R551	404K5133	R,METAL 22H 5% 1/4W
⚠R760	404K5149	R,METAL 100H 5% 1/4W
⚠R465A	404K5345	R,METAL 1.0H 5% 1/4W
⚠R5D1	40405109	R,METAL 2.2H 5% 1/4W
⚠R5B9	40406101	R,METAL 1.0H 5% 1/2W
R561	40406169	R,METAL 680H 5% 1/2W
⚠R461 ⚠R590	409A6125	R,FUSE 10H 5% 1/4W

*** CAPACITORS ***

SYMBOL	PARTS NO	DESCRIPTION
C520 C541	420C9560	C,CERAMIC 500V 560PF
C557 C931B C931G	420C9563	C,CERAMIC 500V 1000PF
C931R		
C5A2 ⚠C525	420C9565	C,CERAMIC 500V 1500PF
C932B C932G C932R	420C9567	C,CERAMIC 500V 2200PF
C962		
C559 C914B C914G	420C9569	C,CERAMIC 50V 3300PF
C914R		
C951	420DK108	C,CERAMIC 2KV 10000PF
C431 C5B0 C5B1	421A0425	C,CERAMIC 50V 0.01UF
C5B3 C5B4 C530		
C763		
C401	421C0208	C,CERAMIC 50V 390PF
C916B C916G C916R	421C0209	C,CERAMIC 50V 470PF
C5C2	421C0210	C,CERAMIC 50V 560PF
C551 C757 C804	421C0213	C,CERAMIC 50V 1000PF
C462 C512 C549	421D6009	C,CERAMIC 25V 0.1UF
C564 C702B C702G	421D6009	C,CERAMIC 25V 0.1UF
C702R C752 C753		
C754 C762 C766		
C767 C768 C784		
C803 C861 C863		
C864 C865 C901		
C911B C911G C911R		
C921 C964 C965		
C423 C562 C782	421D6013	C,CERAMIC 50V 0.1UF
C783		
C703B C703G C703R	423A1033	C,CERAMIC 50V 33PF
C413	423A1053	C,CERAMIC 50V 220PF
C801 C802	423A2025	C,CERAMIC 50V 15PF
C732 C756	423A2031	C,CERAMIC 50V 27PF
C537	423A2037	C,CERAMIC 50V 47PF
C502 C912B C912G	423A2045	C,CERAMIC 50V 100PF
C912R		
C504	423A2105	C,CERAMIC 50V 270PF
C505	427F4607	C,FILM 50V 3300PF
C507 C540	427F4613	C,FILM 50V 0.01UF
C404	427F4615	C,FILM 50V 0.015UF
C410A	427F4617	C,FILM 50V 0.022UF
C422 C425 C434	427F4625	C,FILM 50V 0.1UF
C424	427F4629	C,FILM 50V 0.22UF
C503	427F4647	C,FILM 50V 470PF
C534 C535 C546	427F4651	C,FILM 50V 1000PF
C533	427F4655	C,FILM 50V 2200PF
C536 C552	427F4663	C,FILM 50V 0.01UF
C755	427F4669	C,FILM 50V 0.033UF
⚠C583	427F4673	C,FILM 50V 0.068UF
C592	427F4675	C,FILM 50V 0.1UF
C509	427F8404	C,FILM 100V 1800PF
C532	42703663	C,FILM 400V 0.01UF
⚠C572	42703865	C,FILM 400V 0.015UF
C731	4276D213	C,MYLAR 200V 0.01UF
C415	428B3024	C,METAL FILM 50V 0.82UF
C403 C410	428B3025	C,METAL FILM 50V 1.0UF
⚠C570	42807514	C,FILM 1.6KV 3600PF
⚠C523	42808075	C,FILM 1.6KV 5200PF
⚠C571	42808589	C,METAL FILM 1.6KV 7400PF
⚠C526	42839614	C,METAL 400V 0.62UF
⚠C529	42839655	C,METAL 200V 0.22UF
C915B C915G C915R	42840097	C,FILM 250V 0.22UF
⚠C524	42899914	C,METAL FILM 400V 0.18UF
C416	430BF047	C,ELEC 25V 2200UF

SYMBOL	PARTS NO	DESCRIPTION
C913B C913G C913R	430B3182	C,ELEC 160V 1.0UF
C5C0 C5C1	430B6017	C,ELEC 10V 220UF
C862 C902	430B6029	C,ELEC 16V 100UF
C566	430B6032	C,ELEC 16V 470UF
C5A0 C765	430B6053	C,ELEC 35V 47UF
C417	430B6054	C,ELEC 35V 100UF
⚠C585	430B6055	C,ELEC 35V 220UF
C555	430B6057	C,ELEC 35V 470UF
C420 C432 C510	430B6061	C,ELEC 50V 1.0UF
C511 C550		
C421 C5C3	430B6064	C,ELEC 50V 4.7UF
C5A6 C542 C543	430B6065	C,ELEC 50V 10UF
C544 C545 ⚠C581		
⚠C593		
C538 ⚠C578 ⚠C586	430B6068	C,ELEC 50V 47UF
⚠C589		
C441 C558	430B6512	C,ELEC 160V 1.0UF
C5A1 C568 C966	430B6556	C,ELEC 250V 10UF
C576	430B8177	C,ELEC 50V 3.3UF
⚠C579	430B9016	C,ELEC 10V 100UF
⚠C2001	430B9017	C,ELEC 10V 220UF
⚠C2002	430B9019	C,ELEC 10V 470UF
C701B C701G C701R	430B9025	C,ELEC 16V 10UF
C751		
C567	430B9029	C,ELEC 16V 100UF
C461 C522	430B9030	C,ELEC 16V 220UF
C563 C761	430B9032	C,ELEC 16V 470UF
C465	430B9033	C,ELEC 16V 1000UF
C961 C963	430B9041	C,ELEC 25V 47UF
C561	430B9042	C,ELEC 25V 100UF
C553	430B9043	C,ELEC 25V 220UF
C411 C412	430B9054	C,ELEC 35V 100UF
C506 C508	430B9061	C,ELEC 50V 1.0UF
C419	430B9062	C,ELEC 50V 2.2UF
C426	430B9066	C,ELEC 50V 22UF
C402	430B9221	C,ELEC 50V 0.1UF
C548	430B9536	C,ELEC 200V 10UF
C565	430B9556	C,ELEC 250V 10UF
⚠C580	4309H060	C,ELEC 250V 3.3UF
⚠C582	433A3033	C,ELEC 25V 10UF
C427	433A3043	C,ELEC 35V 4.7UF
C781	433J9021	C,ELEC 25V 10UF
C501	4339J021	C,ELEC 25V 10UF

REPLACEMENT PARTS LIST

The components specified for Model JC-1521HMR(H).

Notes: The components identified by ⚠ mark are critical for safety.
Replace only with parts Number specified.

SYMBOL	PARTS NO	DESCRIPTION
*** CRT & TUNER ***		
⚠CRT	33015510	CRT M36KLH680X83(R)
*** ICS ***		
⚠IC504	370A1009	IC UPC1093J-T (REG)
IC502	37005182	IC LM7812CT(REG)
IC752	37011018	IC UPC311C (COMP)
IC403 IC404 IC501	37011210	IC XRA10324 (Q OP-AMP)
IC505 IC506		
⚠IC401	37056494	IC LA7853
IC402	37056689	IC LA7837
IC751	37056846	IC LM1203N
IC801	37056853	MOS PCZ80-145
IC503	37101543	IC XRA10339
*** TRANSISTORS ***		
Q413	350A1117	TR 2SA1515-T Q
Q545	350C1218	TR 2SB1329-T105 R
⚠Q2002 ⚠Q2004 Q410	350E3218	TR 2SC1740S-T R
Q421 Q502 Q510		
Q523 Q543 Q546		
Q547 Q701 Q702		
Q703 Q782 Q783		
Q922		
Q544	350G1018	TR 2SD2005-T105 R
Q423 Q574 Q932B	350H4417	TR,2SC1473-TA Q
Q932G Q932R		
Q911B Q911G Q911R	350H5017	TR,2SC3811-TA Q
Q412	350J2717	TR 2SC3377-T Q
Q424 ⚠Q570 Q931B	350K5217	TR,2SA1018-TA Q
Q931G Q931R		
⚠Q2001 ⚠Q2003 Q501	350K5718	TR 2SA933S-T R
Q511 Q521 Q524		
Q548 Q573 Q752		
Q781 Q901 Q921		
Q913B Q913G Q913R	35006804	TR,2SA1538-RA D
Q526	35056312	TR 2SC2688 L
⚠Q516	35082401	TR 2SC3486-YB
Q912B Q912G Q912R	35086004	TR,2SC3953-RA D
Q914B Q914G Q914R		
Q403 Q404	351G0556	TR DTA114WS-T
Q405	351G0560	TR DTA144WS-T
Q411 Q420 Q522	351G0601	TR DTC114ES-T
Q540 Q541 Q751		
Q401 Q402 Q431	351G0602	TR DTC144ES-T
Q432 Q433 Q434		
Q435 Q437 Q438		
Q580		
Q512	35121900	TR 2SK752
Q520 Q542	35122100	TR 2SK703
⚠Q551	35122200	TR 2SK854
Q525	35122500	TR 2SK758
⚠Q552	35123000	TR 2SK949
⚠Q549	35124100	TR 2SK1217

SYMBOL	PARTS NO	DESCRIPTION
*** DIODES ***		
ZD751	360A0034	DIODE MTZJ5.1A T-72
ZD510	360A0035	DIODE MTZJ5.1B T-72
ZD401	360A0038	DIODE MTZJ5.6A T-72
⚠ZD508	360A0043	DIODE MTZJ6.2B T-72
ZD561 ZD564	360A0059	DIODE MTZJ9.1B T-72
⚠D2003 ⚠D2004 D2005	360K1027	DI 1SS132 AT52
D406 D407 D410		
D411 D412 D413		
D414 D415 D416		
D509 D510 D511		
D512 D513 D514		
D515 D516 D517		
D518 D529 D530		
D531A D531B D531C		
D532 D533 D535		
D536 D538 D54A		
⚠D546 D548 D550		
D561 D562 D563		
D701B D701G D701R		
D710 D711 D781		
D801 D802 D803		
D804 D805 D806		
D807 D808 D809		
D810 D811 D812		
D813 D814 D815		
D816 D817 D911B	360K1027	DI 1SS132 AT52
D911G D911R D912B		
D912G D912R D913B		
D913G D913R D962		
⚠D523 ⚠D528 D549	360K1032	DIODE 1SS82-TA
D712 D713 D931B		
D931G D931R D961		
⚠ZD2001 ⚠ZD2002	360K3143	DIODE,RD8.2JSB(1)-T4
ZD501	360K3410	DIODE RD8.2JSB(2)/JSAB(2)
ZD2003	360K3605	DIODE RD2.2ESB(1)-T4
ZD506	360K3624	DIODE RD3.9ESB(2)-T4
ZD509	360K3643	DIODE RD6.2ESB(2)-T4
ZD961	360K3647	DIODE RD6.8ESB(2)-T4
ZD520	360K3655	DIODE RD8.2ESB(2)/ESAB(2)
ZD502	360K3671	DIODE RD12ESB(2)/ESAB(2)
ZD503 ZD504 ZD505	360K3677	DIODE RD15ESB-T4
ZD507	360K3679	DIODE RD15ESB(2)-T4
ZD402	360K3692	DIODE RD20ESB(3)-T4
ZD562	360K3792	DIODE MTZ 3.9B T-72
ZD861	360K3804	DIODE MTZ5.1C T-72
ZD563	360K3823	DIODE MTZ 8.2BT-72
D405 D504 D506	361K7160	DIODE TVR-06G G23
D508 D521 D522		
D527 ⚠D541 ⚠D542		
D543 ⚠D544 ⚠D547		
D520	361K7562	DIODE EGP10G G23
D519	36107293	DIODE RK14
D507	36107518	DIODE RG2
⚠D501	36107530	DIODE RS4FS

SYMBOL	PARTS NO	DESCRIPTION
△D540	36107560	DIODE RG2A2
D001 D002	36801331	LED SLR-54MT3F/PQ
△D2001 △D2002	38005054	VARISTOR MA29W-A

*** TRANSFORMERS ***

T501	45803010	TRANS,H.DRIVE
T503	46304107	TRANS,CONVERTER
△T504	47105671	F.B.T (SR)
△T502	47710013	TRANS,H-OUT

*** VARIABLE RESISTORS ***

VR701B VR701G VR701R	410G1151	R,VARIABLE B100H
VR410 VR513	410G1155	R,VARIABLE B470H
VR781	410G1157	R,VARIABLE B1.0K
VR502	410G1159	R,VARIABLE B2.2K
VR411 VR921	410G1161	R,VARIABLE B4.7K
VR420 VR501	410G1163	R,VARIABLE B10K
VR401 VR931B VR931G VR931R	410G1165	R,VARIABLE B22K
VR531 VR532 VR533 VR535 VR536 VR538 VR932B VR932G	410G1167	R,VARIABLE B47K
VR001 VR002	41011106	R,VARIABLE B10K-V
VR004	41011303	R,VARIABLE B20K-V
VR005	41011310	R,VARIABLE B10K-V
VR006	41011312	R,VARIABLE B500
VR003	41011313	R,VARIABLE B50
VR007	41011314	R,VARIAVLE
VR511	41085009	R,VARIABLE B10K
VR510	41085012	R,VARIABLE B50K
△VR2001△VR2002	41505005	R,VARIABLE B2K
△VR516	41505009	R,VARIABLE B20K

*** RELAYS & SWITCHES ***

SW001	653F0031	SWITCH,PUSH BUTTON
	65360027	SWTCH,PUSH BUTTON

*** COILS & FILTERS ***

LC701B LC701G LC701R	390J9014	FILTER ZJSC-R33-390TA
R507	39030239	R,NETWORK
△L502	60919607	COIL,H.LIN
L504	60999004	COIL,CHOKE
L911B L911R	610E1706	COIL,FILTER 1.2UH
L911G	610E1708	COIL,FILTER 1.8UH
L912G	610E1711	COIL,FILTER 3.3UH
L912B L912R	610E1712	COIL,FILTER 3.9UH
L507	610F3025	COIL,FILTER 47UH
L501	610F7010	COIL,FILTER 2.7UH
L761	610F7025	COIL,FILTER 47UH
L931B L931R	610F8005	COIL,FILTER 1.0UH
L931G	610F8037	COIL,FILTER 0.56UH
	61062076	POWER LINE FILTER
L506	61064006	COIL,FILTER 50UH
L505	61070127	FILTER CHOKC

SYMBOL	PARTS NO	DESCRIPTION
L509	61070181	COIL,CHOKE PJ87-102K
DG	61315203	COIL,DEGAUSSING
LC961	616J9003	NOISE FILTER ZJSC-2R2-101
LC501 L508	616K5101	INDUCTOR,BEADS
LC911B LC911G LC911R	616K6027	NOISE FILTER 2A222-TA
LC861 LC862 LC962	616K6028	NOISE FILTER 1H223X-TA
LC963	616K6029	NOISE FILTER
LC401	616K6718	NOISE FILTER

*** PWB ASSYS ***

	84N41C02	SUB PWB ASSY (B-1)
	84N41D04	MAIN PWB ASSY (B-1)

*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

SW-PS	31104020	SW.REG.UNIT (SMP-120BB-1)
HS402	31709202	SHEET,INSULATOR
HS516 HS549	31709503	SHEET,INSULATOR
SG931B SG931G SG931R SG951	32990047	ARRESTER
X801	64098039	X'TAL(10.000MHZ)
SG952	66706002	SPARK GAP 1.5KV
△CN-CRT	70032055	CRT SOCKET(HPS0199)
CABLE	73893102	CABLE SIGNAL MD15P-11P-BJ
VR2001 VR2002 VR516	74004891	CAP
CORD	75513033	LINE CORD

*** APPEARANCE PARTS ***

	25313791	CABINET BACK ASSY
	25313821	CABINET BOTTOM
	25314111	CABINET FRONT ASSY
	25419001	REVOLVING STAND ASSY
	25419021	REVOLVING SPINDLE
	25419841	LID,CONTROL ASSY
	25534631	COIL SPRING
	25607291	SLIDE SHEET
	25757643	LABEL(REV.)
	25775171	NAME PLATE,INSTRUCTION

*** KNOBS & PUSH BUTTONS ***

	25454671	PUSH BUTTON (SW)
	25454681	KNOB CONTROL

*** PRINTED & PACKING MATERIALS ***

	24813191	BAG,POLYETHYLENE(150*370)
	25823181	FILLER (T) CARTON
	25823192	FILLER (B) CARTON
	25823761	CARTON BOX (JC-1521HMR)
	25825501	SHEET, PROTECTION
	78034406	MONITOR SALES OFFICE LIST
	78043392	WARRANTY CARD
	78125683	USER'S MANUAL JC-1521HMB
	599910331	S/M JC-1521HMB/B(EE)/ R(N),(H)

*** RESISTORS ***

SYMBOL	PARTS NO	DESCRIPTION
R001	401C6665	R,CARBON 470H 5% 1/4W
⚠R5D6	401C6673	R,CARBON 1.0K 5% 1/4W
R5B0	401C6685	R,CARBON 3.3K 5% 1/4W
R571	401H5601	R,CARBON 1.0H 5% 1/2W
R570	401H5603	R,CARBON 1.2H 5% 1/2W
R5C2	401H5617	R,CARBON 4.7H 5% 1/2W
R937B R937G R937R	401H5641	R,CARBON 47H 5% 1/2W
R913B R913G R913R	401H5643	R,CARBON 56H 5% 1/2W
R914B R914G R914R	401H5645	R,CARBON 68H 5% 1/2W
R951	401H5649	R,CARBON 100H 5% 1/2W
R429 R961	401H5661	R,CARBON 330H 5% 1/2W
R759	401H5669	R,CARBON 680H 5% 1/2W
R553	401H5681	R,CARBON 2.2K 5% 1/2W
R952	401H5689	R,CARBON 4.7K 5% 1/2W
R5D7	401J9820	RD16Z,0H,AT52
R702B R702G R702R	401K5641	R,CARBON 47H 5% 1/6W
R5B7 R5B8 R912B	401K5647	R,CARBON 82H 5% 1/6W
R912G R912R		
⚠R2003 ⚠R2007 R5C4	401K5649	R,CARBON 100H 5% 1/6W
R529 R576 R704B		
R704G R704R R708B		
R708G R708R R788		
R911B R911G R911R		
R701B R701G R701R	401K5653	R,CARBON 150H 5% 1/6W
R403 R404 R405	401K5657	R,CARBON 220H 5% 1/6W
R50A R504 R757		
R804 R805 R806		
R807 R808 R810		
R811 R813		
R447 R801 R925	401K5661	R,CARBON 330H 5% 1/6W
R707B R707G R707R	401K5663	R,CARBON 390H 5% 1/6W
R938G		
R442 R497 R706B	401K5665	R,CARBON 470H 5% 1/6W
R706G R706R		
R752	401K5667	R,CARBON 560H 5% 1/6W
R915B R915G	401K5671	R,CARBON 820H 5% 1/6W
R407 R415 R416	401K5673	R,CARBON 1.0K 5% 1/6W
R434 R448 R5D9		
R5E9 R5F4 R5F8		
R526 R533 R536		
R538 R550 R552		
R705B R705G R705R		
R756 R781 R785		
R792 R901 R924		
R432 R436 R438	401K5675	R,CARBON 1.2K 5% 1/6W
R427 R433 R441	401K5677	R,CARBON 1.5K 5% 1/6W
R780		
R53B R915R R938B	401K5679	R,CARBON 1.8K 5% 1/6W
R2014 R401 R5F0	401K5681	R,CARBON 2.2K 5% 1/6W
R784 R926 R938R		
R406 R443 R535	401K5683	R,CARBON 2.7K 5% 1/6W
R786		
⚠R2011 ⚠R2013 R5A3	401K5685	R,CARBON 3.3K 5% 1/6W
R921 R923 R927		
R587 R731 R755	401K5687	R,CARBON 3.9K 5% 1/6W
R922		
R437 R522 R532	401K5689	R,CARBON 4.7K 5% 1/6W

SYMBOL	PARTS NO	DESCRIPTION
R736 R928		
R5A8 R5D4 R5EA	401K5691	R,CARBON 5.6K 5% 1/6W
R580 R782		
R5F3 R591 R732	401K5693	R,CARBON 6.8K 5% 1/6W
R783		
⚠R2010 ⚠R2012 R524	401K5695	R,CARBON 8.2K 5% 1/6W
R585 R787 R903		
⚠R2004 ⚠R2008 R402	401K5697	R,CARBON 10K 5% 1/6W
R412 R445 R5A0		
R5A2 R5A6 R5A9		
⚠R5CA R5C0 ⚠R5E0		
⚠R5E3 R5E6 R5E7		
R5H0 R5H1 R502		
R503 R506 R530		
R578 R583 R593		
R598 R703B R703G		
R703R R734 R754		
R802 R803		
R002 ⚠R2002 ⚠R2006	401K5699	R,CARBON 12K 5% 1/6W
R518 R521 R531		
R421 R47A R5A7	401K5701	R,CARBON 15K 5% 1/6W
R581 R592		
R751 R935B R935G	401K5703	R,CARBON 18K 5% 1/6W
R935R		
R423 R5B6 R520	401K5705	R,CARBON 22K 5% 1/6W
R523 R542 R545		
R55A R584		
⚠R2001 ⚠R2005 R546	401K5707	R,CARBON 27K 5% 1/6W
R411 R424 R493	401K5709	R,CARBON 33K 5% 1/6W
R5CB R525 R586		
R735 R789 R934B		
R934G R934R		
R5B1 R5B2 ⚠R5C8	401K5711	R,CARBON 39K 5% 1/6W
R422 R435 R494	401K5713	R,CARBON 47K 5% 1/6W
R495 R5E8 R53A		
R543 R544 R594		
R595 R597		
R547	401K5715	R,CARBON 56K 5% 1/6W
R936G	401K5717	R,CARBON 68K 5% 1/6W
R936B	401K5719	R,CARBON 82K 5% 1/6W
R492 R499 R5E5	401K5721	R,CARBON 100K 5% 1/6W
R5F5 R548 R596		
R5F2	401K5723	R,CARBON 120K 5% 1/6W
R933B R933G R933R	401K5727	R,CARBON 180K 5% 1/6W
R931B R931G R931R	401K5729	R,CARBON 220K 5% 1/6W
⚠R5E4 R932B R932G	401K5731	R,CARBON 270K 5% 1/6W
R932R		
R582	401K5737	R,CARBON 470K 5% 1/6W
R472 R491	401K5739	R,CARBON 560K 5% 1/6W
R498	401K5743	R,CARBON 820K 5% 1/6W
R480 R5A4 R5B5	401K5745	R,CARBON 1.0M 5% 1/6W
⚠R5H2 R733 R814		
R540	40107197	R,CARBON 10K 5% 1/6W
⚠R917B ⚠R917G ⚠R917R	40177133	R,CARBON 22H 5% 1/4W
⚠R918B ⚠R918G ⚠R918R		
⚠R572	403F1149	R,METAL OXIDE 100H 5% 1W
R562	403F1161	R,METAL 330H 5% 1W
R588	403F1175	R,METAL OXIDE 1.2K 5% 1W

SYMBOL	PARTS NO	DESCRIPTION
R425	403F2103	R,METAL OXIDE 1.2H 5% 2W
R589	403F2133	R,METAL OXIDE 22H 5% 2W
R861	403F2141	R,METAL OXIDE 47H 5% 2W
⚠R5D0	403F2163	R,METAL OXIDE 390H 5% 2W
R431	403F3147	R,METAL OXIDE 82H 5% 3W
R557	403F3169	R,METAL OXIDE 680H 5% 3W
R558	403F3171	R,METAL OXIDE 820H 5% 3W
R916B R916G	40318273	R,METAL 1.0K 5% 7W
R916R	40318998	R,METAL 1.0K 5% 7W
R5E1	40372109	R,METAL 2.2H 5% 2W
R513	404C1681	R,METAL 2.2K 1% 1/6W
R514	404C1683	R,METAL 2.7K 1% 1/6W
R510	404C1687	R,METAL 3.9K 1% 1/6W
R539	404C1695	R,METAL 8.2K 1% 1/6W
R511 R753 R790	404C1697	R,METAL 10K 1% 1/6W
R457	404C1700	R,METAL 13K 1% 1/6W
R439 R473 R483	404C1701	R,METAL 15K 1% 1/6W
R512 R527		
R451 R487 R528	404C1702	R,METAL 16K 1% 1/6W
R410 R476 R484	404C1703	R,METAL 18K 1% 1/6W
R409	404C1704	R,METAL 20K 1% 1/6W
R420 R471 R479	404C1707	R,METAL 27K 1% 1/6W
R452 R454	404C1709	R,METAL 33K 1% 1/6W
R496	404C1711	R,METAL 39K 1% 1/6W
R408 R458	404C1714	R,METAL 51K 1% 1/6W
R791	404C1715	R,METAL 56K 1% 1/6W
R477 R478	404C1717	R,METAL 68K 1% 1/6W
R474 R475	404C1718	R,METAL 75K 1% 1/6W
R936R	404C1720	R,METAL 91K 1% 1/6W
R482	404C1721	R,METAL 100K 1% 1/6W
R453	404C1723	R,METAL 120K 1% 1/6W
R515 R517	404C1725	R,METAL 150K 1% 1/6W
R486	404C1726	R,METAL 160K 1% 1/6W
R455 R470 R516	404C1727	R,METAL 180K 1% 1/6W
R5D2	404C1731	R,METAL 270K 1% 1/6W
R481 R485 R490	404C1733	R,METAL 330K 1% 1/6W
R519		
R509	404C1739	R,METAL 560K 1% 1/6W
⚠R5C5 ⚠R5C6 ⚠R5C7	404K5109	R,METAL 2.2H 5% 1/4W
⚠R430	404K5117	R,METAL 4.7H 5% 1/4W
⚠R5C1 R551	404K5133	R,METAL 22H 5% 1/4W
⚠R760	404K5149	R,METAL 100H 5% 1/4W
⚠R465A	404K5345	R,METAL 1.0H 5% 1/4W
⚠R5D1	40405109	R,METAL 2.2H 5% 1/4W
⚠R5B9	40406101	R,METAL 1.0H 5% 1/2W
R561	40406169	R,METAL 680H 5% 1/2W
⚠R461 ⚠R590	409A6125	R,FUSE 10H 5% 1/4W

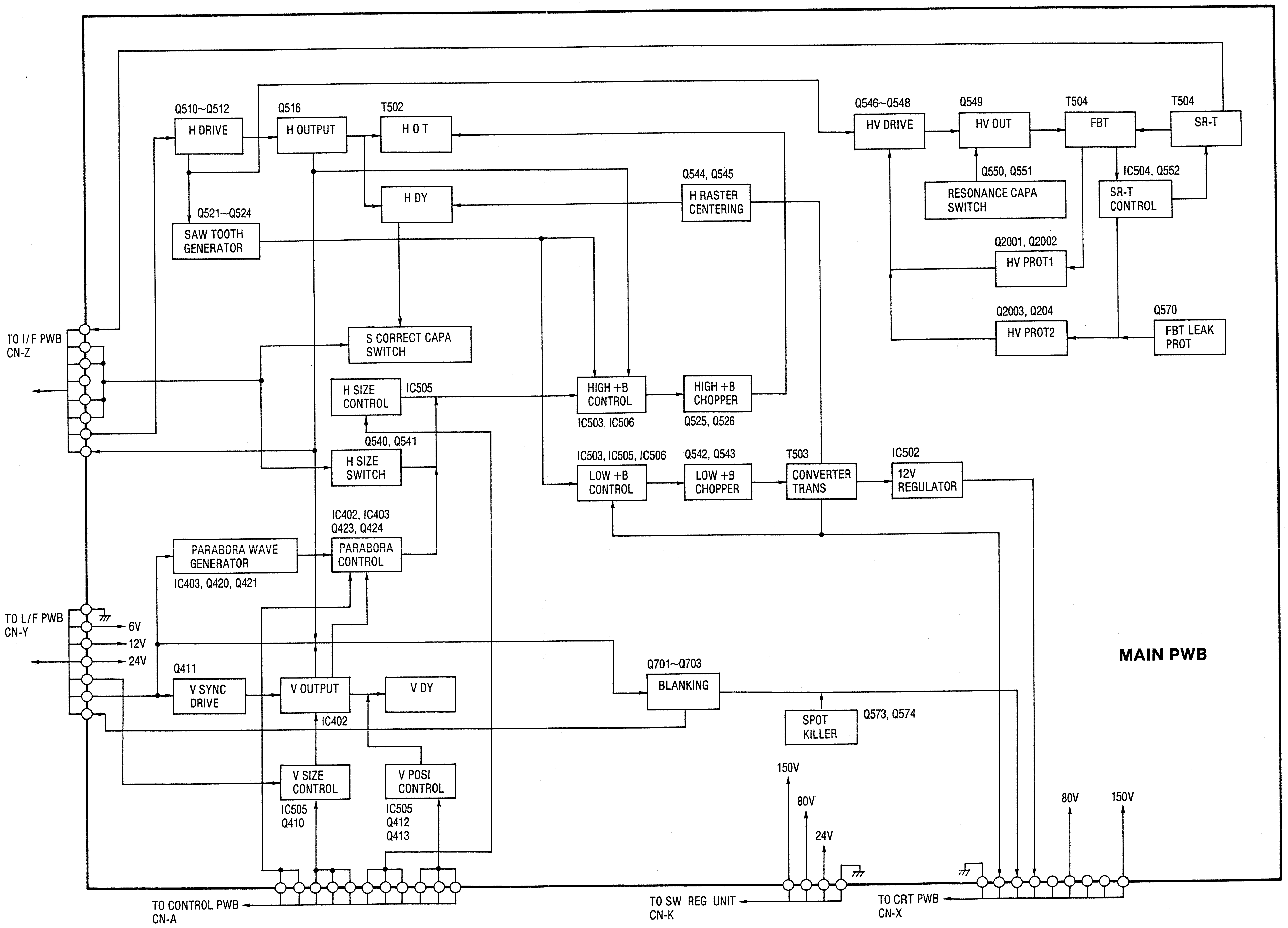
*** CAPACITORS ***

C520 C541	420C9560	C,CERAMIC 500V 560PF
C557 C931B C931G	420C9563	C,CERAMIC 500V 1000PF
C931R		
C5A2 ⚠C525	420C9565	C,CERAMIC 500V 1500PF
C932B C932G C932R	420C9567	C,CERAMIC 500V 2200PF

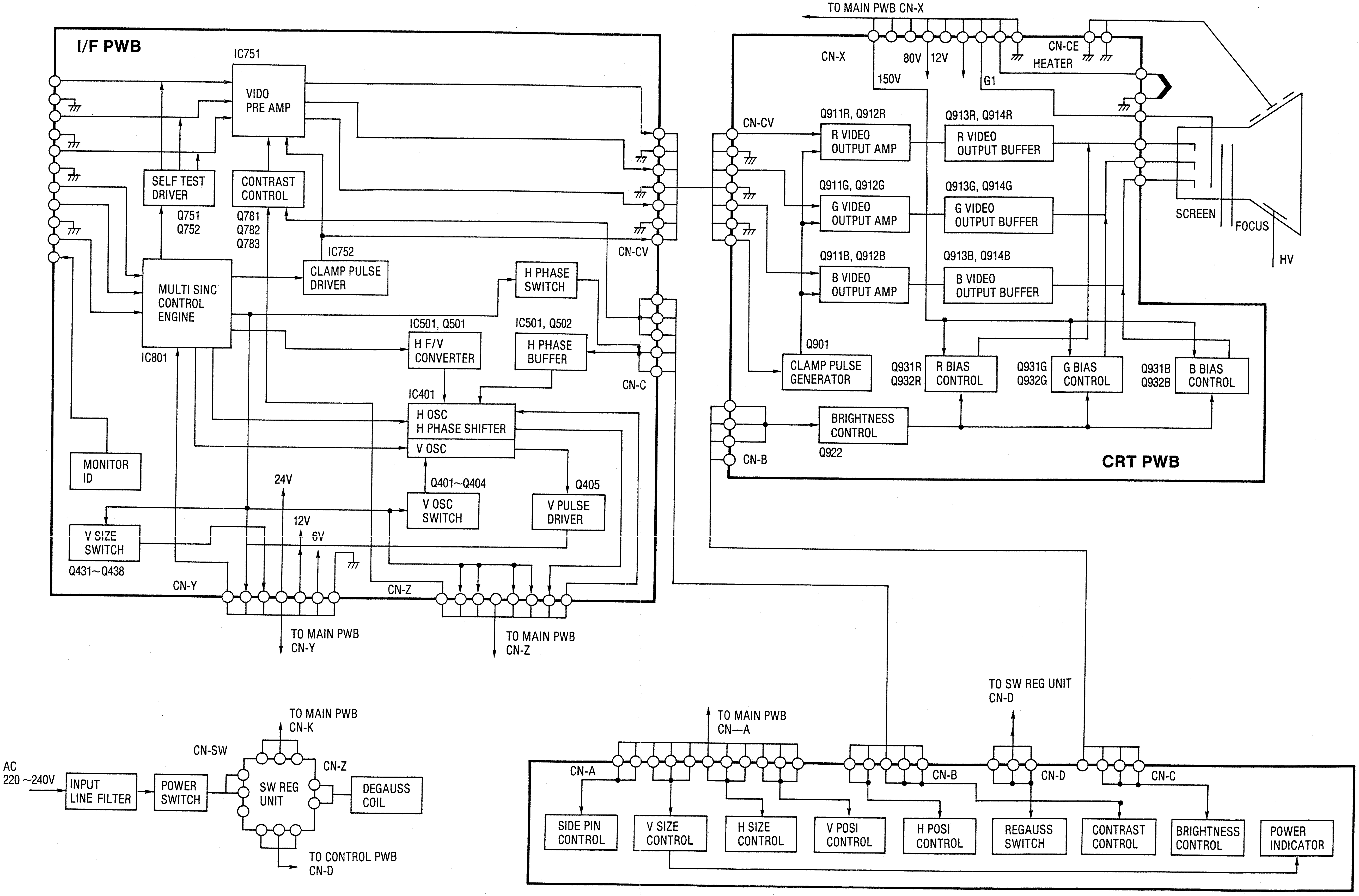
SYMBOL	PARTS NO	DESCRIPTION
C962		
C559 C914B C914G	420C9569	C,CERAMIC 50V 3300PF
C914R		
C951	420DK108	C,CERAMIC 2KV 10000PF
C431 C5B0 C5B1	421A0425	C,CERAMIC 50V 0.01UF
C5B3 C5B4 C530		
C763		
C401	421C0208	C,CERAMIC 50V 390PF
C916B C916G C916R	421C0209	C,CERAMIC 50V 470PF
C5C2	421C0210	C,CERAMIC 50V 560PF
C551 C757 C804	421C0213	C,CERAMIC 50V 1000PF
C462 C512 C549	421D6009	C,CERAMIC 25V 0.1UF
C564 C702B C702G	421D6009	C,CERAMIC 25V 0.1UF
C702R C752 C753		
C754 C762 C766		
C767 C768 C784		
C803 C861 C863		
C864 C865 C901		
C911B C911G C911R		
C921 C964 C965		
C423 C562 C782	421D6013	C,CERAMIC 50V 0.1UF
C783		
C703B C703G C703R	423A1033	C,CERAMIC 50V 33PF
C413	423A1053	C,CERAMIC 50V 220PF
C801 C802	423A2025	C,CERAMIC 50V 15PF
C732 C756	423A2031	C,CERAMIC 50V 27PF
C537	423A2037	C,CERAMIC 50V 47PF
C502 C912B C912G	423A2045	C,CERAMIC 50V 100PF
C912R		
C504	423A2105	C,CERAMIC 50V 270PF
C505	427F4607	C,FILM 50V 3300PF
C507 C540	427F4613	C,FILM 50V 0.01UF
C404	427F4615	C,FILM 50V 0.015UF
C434	427F4623	C,FILM 50V 0.068UF
C422 C425	427F4625	C,FILM 50V 0.1UF
C424	427F4629	C,FILM 50V 0.22UF
C503	427F4647	C,FILM 50V 470PF
C534 C535 C546	427F4651	C,FILM 50V 1000PF
C533	427F4655	C,FILM 50V 2200PF
C536 C552	427F4663	C,FILM 50V 0.01UF
C755	427F4669	C,FILM 50V 0.033UF
⚠C583	427F4673	C,FILM 50V 0.068UF
C592	427F4675	C,FILM 50V 0.1UF
C509	427F8404	C,FILM 100V 1800PF
C532	42703663	C,FILM 400V 0.01UF
⚠C572	42703865	C,FILM 400V 0.015UF
C731	4276D213	C,MYLAR 200V 0.01UF
C403 C410	428B3025	C,METAL FILM 50V 1.0UF
⚠C570	42807514	C,FILM 1.6KV 3600PF
⚠C523	42807517	C,FILM 1.6KV 4700PF
⚠C571	42808589	C,METAL FILM 1.6KV 7400PF
⚠C526	42839613	C,METAL 400V 0.56UF
⚠C529	42839655	C,METAL 200V 0.22UF
C915B C915G C915R	42840097	C,FILM 250V 0.22UF

SYMBOL	PARTS NO	DESCRIPTION
⚠C524	42899914	C,METAL FILM 400V 0.18UF
C416	430BF047	C,ELEC 25V 2200UF
C913B C913G C913R	430B3182	C,ELEC 160V 1.0UF
C5C0 C5C1	430B6017	C,ELEC 10V 220UF
C862 C902	430B6029	C,ELEC 16V 100UF
C566	430B6032	C,ELEC 16V 470UF
C5A0 C765	430B6053	C,ELEC 35V 47UF
C417	430B6054	C,ELEC 35V 100UF
⚠C585	430B6055	C,ELEC 35V 220UF
C555	430B6057	C,ELEC 35V 470UF
C415 C420 C432	430B6061	C,ELEC 50V 1.0UF
C510 C511 C550		
C421 C5C3	430B6064	C,ELEC 50V 4.7UF
C5A6 C542 C543	430B6065	C,ELEC 50V 10UF
C544 C545 ⚠C581		
⚠C593		
C538 ⚠C578 ⚠C586	430B6068	C,ELEC 50V 47UF
⚠C589		
C441 C558	430B6512	C,ELEC 160V 1.0UF
C5A1 C568 C966	430B6556	C,ELEC 250V 10UF
C576	430B8177	C,ELEC 50V 3.3UF
⚠C579	430B9016	C,ELEC 10V 100UF
⚠C2001	430B9017	C,ELEC 10V 220UF
⚠C2002	430B9019	C,ELEC 10V 470UF
C701B C701G C701R	430B9025	C,ELEC 16V 10UF
C751		
C567	430B9029	C,ELEC 16V 100UF
C461 C522	430B9030	C,ELEC 16V 220UF
C563 C761	430B9032	C,ELEC 16V 470UF
C465	430B9033	C,ELEC 16V 1000UF
C961 C963	430B9041	C,ELEC 25V 47UF
C561	430B9042	C,ELEC 25V 100UF
C553	430B9043	C,ELEC 25V 220UF
C411 C412	430B9054	C,ELEC 35V 100UF
C506 C508	430B9061	C,ELEC 50V 1.0UF
C419	430B9062	C,ELEC 50V 2.2UF
C426	430B9066	C,ELEC 50V 22UF
C402	430B9221	C,ELEC 50V 0.1UF
C548	430B9536	C,ELEC 200V 10UF
C565	430B9556	C,ELEC 250V 10UF
⚠C580	4309H060	C,ELEC 250V 3.3UF
⚠C582	433A3033	C,ELEC 25V 10UF
C427	433A3043	C,ELEC 35V 4.7UF
C781	433J9021	C,ELEC 25V 10UF
C501	4339J021	C,ELEC 25V 10UF

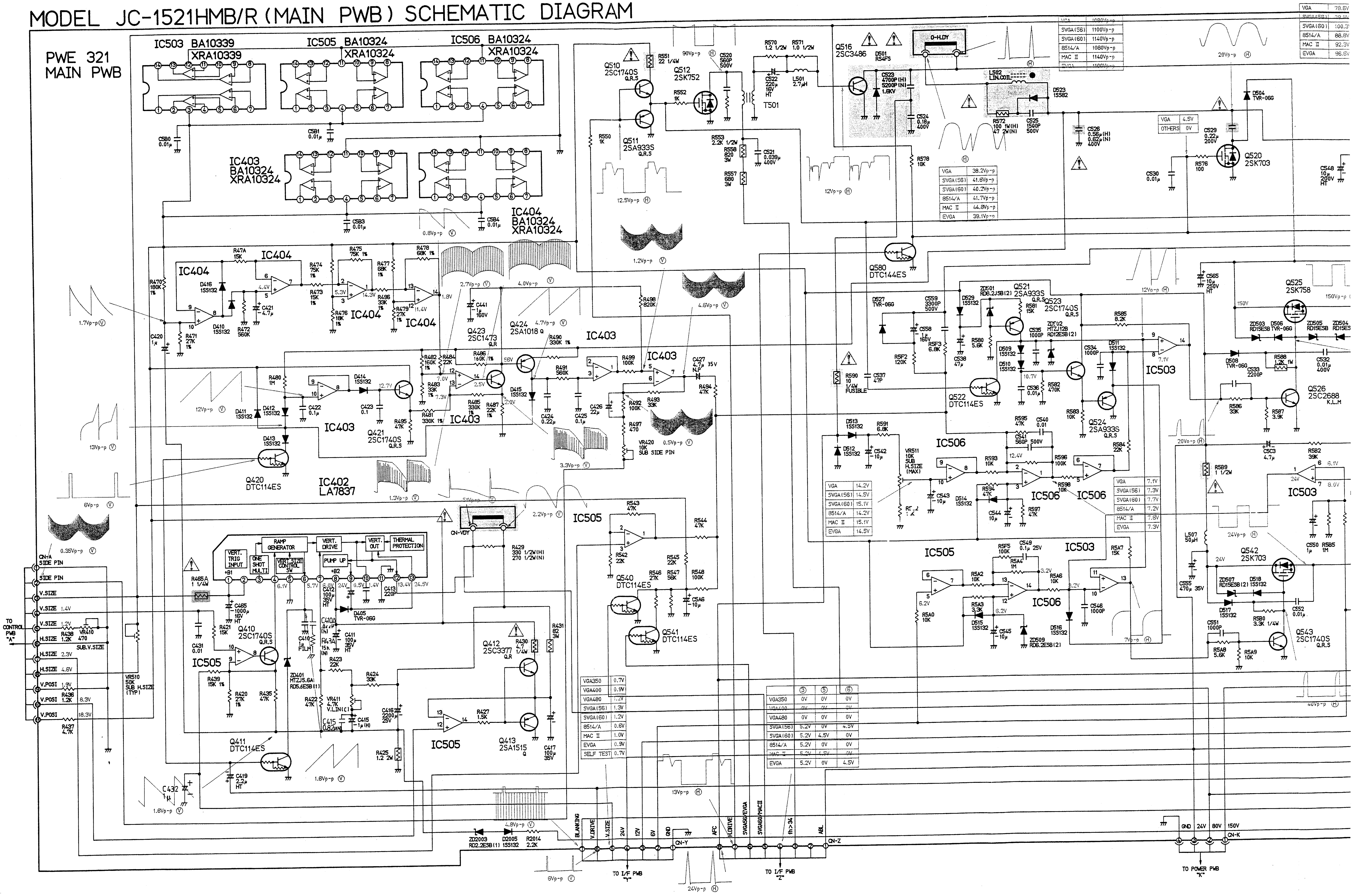
BLOCK DIAGRAM (MAIN PWB)

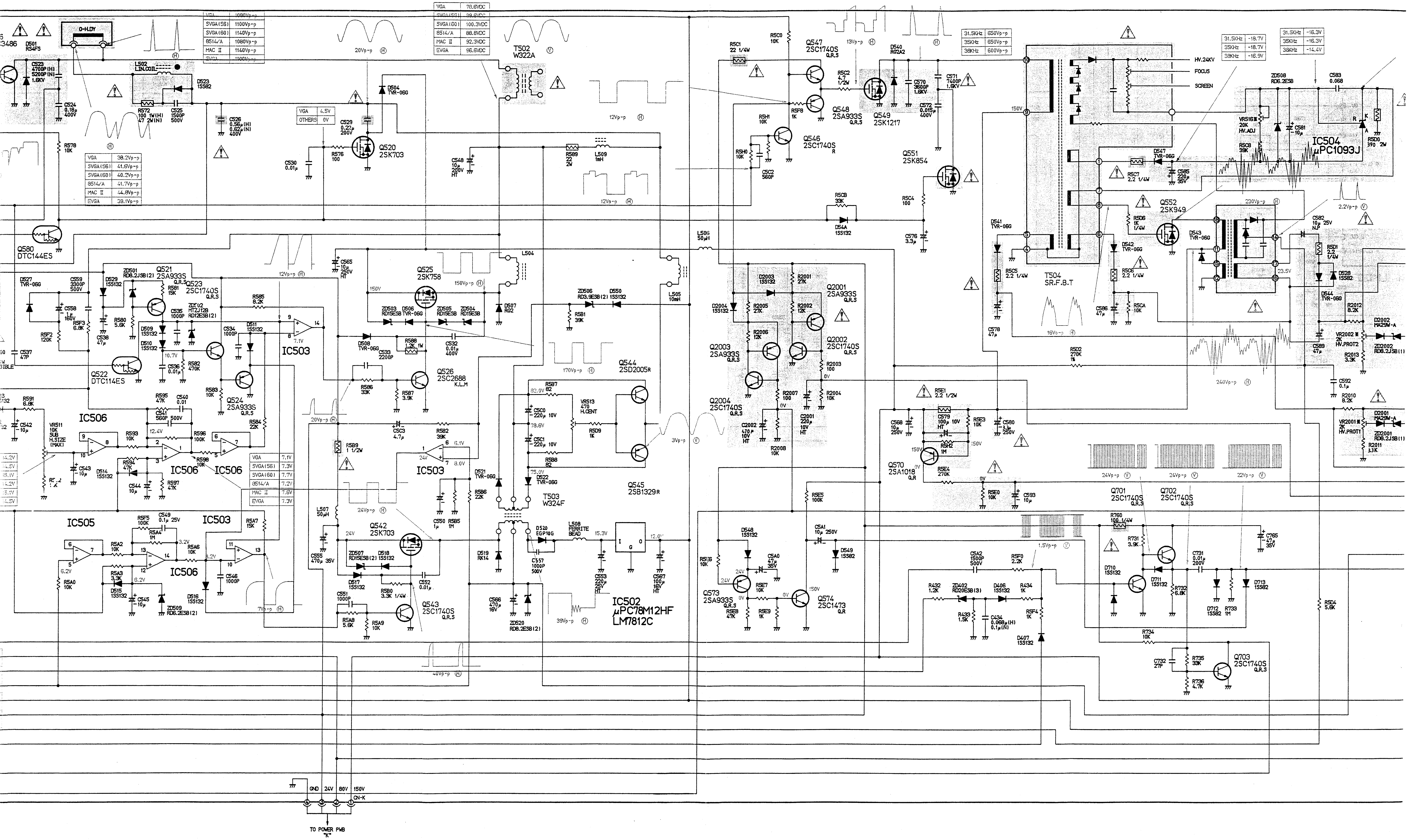

Q510~Q512
H DRIVE
Q516
H OUTPUT
T502
H O T
Q546~Q548
HV DRIVE
Q549
HV OUT
T504
FBT
T504
SR-T
Q550, Q551
RESONANCE CAPA SWITCH
IC504, Q552
SR-T CONTROL
Q544, Q545
H RASTER CENTERING
H DY
Q521~Q524
SAW TOOTH GENERATOR
Q2001, Q2002
HV PROT1
Q2003, Q204
HV PROT2
Q570
FBT LEAK PROT
TO I/F PWB
CN-Z
S CORRECT CAPA SWITCH
H SIZE CONTROL
IC505
HIGH +B CONTROL
IC503, IC506
HIGH +B CHOPPER
Q525, Q526
Q540, Q541
H SIZE SWITCH
IC503, IC505, IC506
LOW +B CONTROL
Q542, Q543
LOW +B CHOPPER
T503
CONVERTER TRANS
IC502
12V REGULATOR
IC402, IC403
Q423, Q424
PARABORA CONTROL
PARABORA WAVE GENERATOR
IC403, Q420, Q421
TO L/F PWB
CN-Y
6V
12V
24V
Q411
V SYNC DRIVE
V OUTPUT
IC402
V DY
Q701~Q703
BLANKING
SPOT KILLER
Q573, Q574
MAIN PWB
V SIZE CONTROL
IC505
Q410
V POSI CONTROL
IC505
Q412
Q413
150V
80V
24V
80V
150V
TO CONTROL PWB
CN-A
TO SW REG UNIT
CN-K
TO CRT PWB
CN-X

BLOCK DIAGRAM (I/F, CRT, CONTROL)

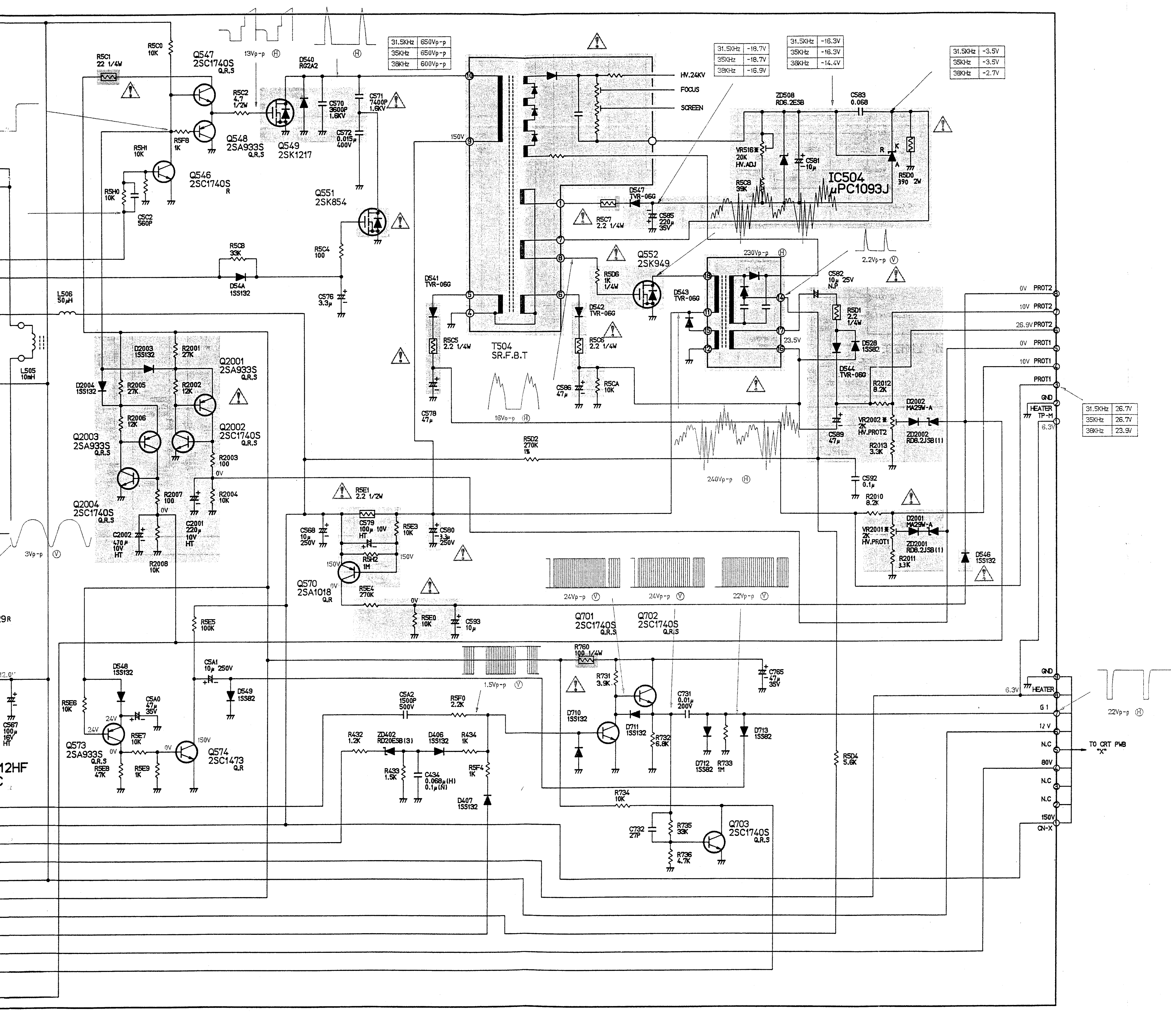

I/F PWB
IC751
VIDO PRE AMP
SELF TEST DRIVER
Q751
Q752
CONTRAST CONTROL
Q781
Q782
Q783
IC752
CLAMP PULSE DRIVER
MULTI SINC CONTROL ENGINE
IC801
H PHASE SWITCH
IC501, Q501
H F/V CONVERTER
IC501, Q502
H PHASE BUFFER
IC401
H OSC
H PHASE SHIFTER
V OSC
MONITOR ID
24V
Q401~Q404
V OSC SWITCH
Q405
V PULSE DRIVER
V SIZE SWITCH
Q431~Q438
12V
6V
CN-CV
CN-C
CN-Y
CN-Z
TO MAIN PWB CN-Y
TO MAIN PWB CN-Z
TO MAIN PWB CN-X
CN-X
80V
12V
150V
G1
CN-CE
HEATER
CN-CV
Q911R, Q912R
R VIDEO OUTPUT AMP
Q913R, Q914R
R VIDEO OUTPUT BUFFER
Q911G, Q912G
G VIDEO OUTPUT AMP
Q913G, Q914G
G VIDEO OUTPUT BUFFER
Q911B, Q912B
B VIDEO OUTPUT AMP
Q913B, Q914B
B VIDEO OUTPUT BUFFER
SCREEN
FOCUS
HV
Q901
CLAMP PULSE GENERATOR
Q931R
Q932R
R BIAS CONTROL
Q931G
Q932G
G BIAS CONTROL
Q931B
Q932B
B BIAS CONTROL
BRIGHTNESS CONTROL
Q922
CN-B
CRT PWB
AC 220~240V
INPUT LINE FILTER
POWER SWITCH
CN-SW
TO MAIN PWB CN-K
SW REG UNIT
CN-Z
DEGAUSS COIL
TO CONTROL PWB CN-D
TO SW REG UNIT CN-D
TO MAIN PWB CN—A
CN-A
CN-B
CN-D
CN-C
SIDE PIN CONTROL
V SIZE CONTROL
H SIZE CONTROL
V POSI CONTROL
H POSI CONTROL
REGAUSS SWITCH
CONTRAST CONTROL
BRIGHTNESS CONTROL
POWER INDICATOR

MODEL JC-1521HMB/R (MAIN PWB) SCHEMATIC DIAGRAM


PWE 321
MAIN PWB
IC503 BA10339
XRA10339
IC505 BA10324
XRA10324
IC506 BA10324
XRA10324
IC403
BA10324
XRA10324
IC404
BA10324
XRA10324
IC402
LA7837
VERT. TRIG INPUT
ONE SHOT MULTI
RAMP GENERATOR
VERT. SIZE CONTROL SW
VERT. DRIVE
PUMP UP
VERT. OUT
THERMAL PROTECTION
Q510 2SC1740S Q.R.S
Q511 2SA933S Q.R.S
Q512 2SK752
T501
Q516 2SC3486
D501 RS4FS
L502 LIN.COIL
D-HLDY
Q520 2SK703
Q521 2SA933S Q.R.S
Q522 DTC114ES
Q523 2SC1740S Q.R.S
Q524 2SA933S Q.R.S
Q525 2SK758
Q526 2SC2688 K.L.M
Q542 2SK703
Q543 2SC1740S Q.R.S
Q580 DTC144ES
Q410 2SC1740S Q.R.S
Q411 DTC114ES
Q412 2SC3377 Q.R
Q413 2SA1515 Q
Q420 DTC114ES
Q421 2SC1740S Q.R.S
Q423 2SC1473 Q.R
Q424 2SA1018 Q
Q540 DTC114ES
Q541 DTC114ES
CN-VDY
VR410 470 SUB.V.SIZE
VR510 50K SUB H.SIZE (TYP)
VR420 10K SUB SIDE PIN
VR511 10K SUB H.SIZE (MAX)
VR411 4.7K V.LIN(C)
TO CONTROL PWB "A"
CN-A
SIDE PIN
V.SIZE
H.SIZE
V.POSI
BLANKING
V.DRIVE
V.SIZE
24V
12V
6V
GND
CN-Y
AFC
H.DRIVE
SVGA56/EVGA
SVGA60/MACII
fh>34
ABL
CN-Z
TO I/F PWB "Y"
TO I/F PWB "Z"
GND 24V 80V 150V
CN-K
TO POWER PWB "K"
VGA350 0.7V
VGA400 0.9V
VGA480 1.2V
SVGA(56) 1.3V
SVGA(60) 1.2V
8514/A 0.6V
MAC II 1.0V
EVGA 0.9V
SELF TEST 0.7V
VGA 38.2Vp-p
SVGA(56) 41.5Vp-p
SVGA(60) 40.2Vp-p
8514/A 41.7Vp-p
MAC II 44.8Vp-p
EVGA 39.1Vp-p
VGA 14.2V
SVGA(56) 14.5V
SVGA(60) 15.1V
8514/A 14.2V
MAC II 15.1V
EVGA 14.5V
VGA 7.1V
SVGA(56) 7.3V
SVGA(60) 7.7V
8514/A 7.2V
MAC II 7.6V
EVGA 7.3V
VGA 4.5V
OTHERS 0V
VGA 1080Vp-p
SVGA(56) 1100Vp-p
SVGA(60) 1140Vp-p
8514/A 1080Vp-p
MAC II 1140Vp-p
VGA 78.6V
SVGA(56) 79.5V
SVGA(60) 100.3V
8514/A 88.8V
MAC II 92.3V
EVGA 96.6V
⑤ ⑤ ⑥
VGA350 0V 0V 0V
VGA480 0V 0V 0V
SVGA(56) 5.2V 0V 4.5V
SVGA(60) 5.2V 4.5V 0V
8514/A 5.2V 0V 0V
EVGA 5.2V 0V 4.5V
1.7Vp-p Ⓥ
12Vp-p Ⓥ
13Vp-p Ⓥ
6Vp-p Ⓥ
0.35Vp-p Ⓥ
1.6Vp-p Ⓥ
0.8Vp-p Ⓥ
2.7Vp-p Ⓥ
4.0Vp-p Ⓥ
4.7Vp-p Ⓥ
1.2Vp-p Ⓥ
4.6Vp-p Ⓥ
0.5Vp-p Ⓥ
3.3Vp-p Ⓥ
1.3Vp-p Ⓥ
2.2Vp-p Ⓥ
4.8Vp-p Ⓥ
12.5Vp-p Ⓗ
90Vp-p Ⓗ
12Vp-p Ⓗ
20Vp-p Ⓗ
24Vp-p Ⓗ
13Vp-p Ⓗ
7Vp-p Ⓗ
40Vp-p Ⓗ


O-H.DY
D501 RS4FS
C523 4700P(H) 5200P(N) 1.6KV
C524 0.18µ 400V
L502 LIN.COIL
D523 1SS82
R572 100 1W(H) 47 2W(N)
C525 1500P 500V
C526 0.56µ(H) 0.62µ(N) 400V
R578 10K
VGA 1080Vp-p
SVGA(56) 1100Vp-p
SVGA(60) 1140Vp-p
8514/A 1080Vp-p
MAC II 1140Vp-p
EVGA 1100Vp-p
VGA 38.2Vp-p
SVGA(56) 41.6Vp-p
SVGA(60) 40.2Vp-p
8514/A 41.7Vp-p
MAC II 44.8Vp-p
EVGA 39.1Vp-p
Q580 DTC144ES
20Vp-p Ⓗ
VGA 4.5V
OTHERS 0V
C529 0.22µ 200V
D504 TVR-06G
Q520 2SK703
C530 0.01µ
R576 100
VGA 78.6VDC
SVGA(56) 39.6VDC
SVGA(60) 100.3VDC
8514/A 88.8VDC
MAC II 92.3VDC
EVGA 96.6VDC
T502 W322A Ⓥ
C548 10µ 200V HT
R589 22 2W
L509 1mH
12Vp-p Ⓗ
D527 TVR-06G
C559 3300P 500V
C558 1µ 160V
R5F3 6.8K
R5F2 120K
C537 47P
D529 1SS132
ZD501 RD6.2JSB(2)
Q521 2SA933S Q.R.S
Q523 2SC1740S Q.R.S
R581 15K
C535 1000P
ZD512 MTZJ12B RD12ESB(2)
C538 47µ
R580 5.6K
D509 1SS132
D510 1SS132
10.7V
C536 0.01µ
R582 470K
C534 1000P
D511 1SS132
R585 8.2K
IC503
7.1V
Q522 DTC114ES
Q524 2SA933S Q.R.S
R583 10K
R591 6.8K
C542 10µ
VR511 10K SUB H.SIZE (MAX)
C543 10µ
IC506
R595 47K
C540 0.01
C541 560P 500V
12.4V
R593 10K
R596 100K
R598 10K
R584 22K
D514 1SS132
R594 47K
C544 10µ
R597 47K
VGA 7.1V
SVGA(56) 7.3V
SVGA(60) 7.7V
8514/A 7.2V
MAC II 7.6V
EVGA 7.5V
IC505
R5F5 100K
C549 0.1µ 25V
R5A4 1M
R5A2 10K
R5A6 10K
3.2V
8.2V
R5A7 15K
6.2V
R5A3 3.3K
D515 1SS132
C545 10µ
ZD509 RD6.2ESB(2)
D516 1SS132
C546 1000P
R5A0 10K
7Vp-p Ⓗ
C565 10µ 250V HT
Q525 2SK758
L504
150V
150Vp-p Ⓗ
ZD503 RD15ESB
D506 TVR-06G
ZD505 RD15ESB
ZD504 RD15ESB
D507 RG2
D508 TVR-06G
C533 2200P
R588 1.2K 1W
C532 0.01µ 400V
Q526 2SC2688 K.L.M
R586 33K
R587 3.9K
20Vp-p Ⓗ
C5C3 4.7µ
R5B2 39K
6.1V
8.0V
24V
R589 1 1/2W
24Vp-p Ⓗ
R5B6 22K
C550 1µ
R5B5 1M
L507 50µH
Q542 2SK703
24V
ZD507 RD15ESB(2)
D518 1SS132
D517 1SS132
R5B0 3.3K 1/4W
C552 0.01µ
C555 470µ 35V
C551 1000P
R5A8 5.6K
R5A9 10K
Q543 2SC1740S Q.R.S
40Vp-p Ⓗ
L506 50µH
L505 10mH
ZD506 RD3.9ESB(2)
D550 1SS132
R5B1 39K
170Vp-p Ⓗ
Q544 2SD2005R
R5B7 82
82.0V
C5C0 220µ 10V
VR513 470 H.CENT
78.6V
R5D9 1K
C5C1 220µ 10V
R5B8 82
75.0V
3Vp-p Ⓥ
D521 TVR-06G
D522 TVR-06G
T503 W324F
Q545 2SB1329R
D519 RK14
D520 EGP10G
C557 1000P 500V
L508 FERRITE BEAD
15.3V
12.0V
C553 220µ 25V HT
C567 100µ 16V HT
C566 470µ 16V
ZD520 RD8.2ESB(2)
39Vp-p Ⓗ
IC502 µPC78M12HF LM7812C
GND 24V 80V 150V
CN-K
TO POWER PWB "K"
R5C1 22 1/4W
R5C0 10K
Q547 2SC1740S Q.R.S
13Vp-p Ⓗ
D540 RG2A2
R5C2 4.7 1/2W
Q548 2SA933S Q.R.S
Q549 2SK1217
C570 3600P 1.6KV
C571 7400P 1.6KV
C572 0.015µ 400V
R5F8 1K
R5H1 10K
Q546 2SC1740S R
R5H0 10K
C5C2 560P
Q551 2SK854
R5C8 33K
D54A 1SS132
R5C4 100
C576 3.3µ
D2003 1SS132
R2001 27K
Q2001 2SA933S Q.R.S
D2004 1SS132
R2005 27K
R2002 12K
R2006 12K
Q2003 2SA933S Q.R.S
Q2002 2SC1740S Q.R.S
R2003 100
0V
Q2004 2SC1740S Q.R.S
R2007 100
R2004 10K
C2002 470µ 10V HT
C2001 220µ 10V HT
R2008 10K
31.5KHz 650Vp-p
35KHz 650Vp-p
38KHz 600Vp-p
31.5KHz -18.7V
35KHz -18.7V
38KHz -16.9V
31.5KHz -16.3V
35KHz -16.3V
38KHz -14.4V
HV.24KV
FOCUS
SCREEN
150V
ZD508 RD6.2ESB
C583 0.068
VR516 20K HV.ADJ
C581 10µ
R5C8 39K
IC504 µPC1093J
R5D0 390 2W
D547 TVR-06G
R5C7 2.2 1/4W
C585 220µ 35V
Q552 2SK949
R5D6 1K 1/4W
230Vp-p Ⓗ
C582 10µ 25V N.P
2.2Vp-p Ⓥ
D541 TVR-06G
D542 TVR-06G
D543 TVR-06G
R5D1 2.2 1/4W
R5C5 2.2 1/4W
R5C6 2.2 1/4W
T504 SR.F.B.T
D528 1SS82
23.5V
D544 TVR-06G
C578 47µ
C586 47µ
R5CA 10K
16Vp-p Ⓗ
R2012 8.2K
D2002 MA29W-A
VR2002 2K HV.PROT2
ZD2002 RD8.2JSB(1)
R5D2 270K 1%
C589 47µ
R2013 3.3K
240Vp-p Ⓗ
C592 0.1µ
R2010 8.2K
R5E1 2.2 1/2W
C579 100µ 10V HT
R5H2 1M
C568 10µ 250V
R5E3 10K
C580 1.3µ 250V
150V
D2001 MA29W-A
VR2001 2K HV.PROT1
ZD2001 RD8.2JSB(1)
R2011 3.3K
Q570 2SA1018 Q.R
R5E4 270K
R5E0 10K
C593 10µ
24Vp-p Ⓥ
24Vp-p Ⓥ
22Vp-p Ⓥ
Q701 2SC1740S Q.R.S
Q702 2SC1740S Q.R.S
R5E5 100K
D548 1SS132
C5A1 10µ 250V
C5A0 47µ 35V
D549 1SS82
R5I6 10K
Q573 2SA933S Q.R.S
R5E7 10K
R5E8 47K
R5E9 1K
Q574 2SC1473 Q.R
1.5Vp-p Ⓥ
C5A2 1500P 500V
R5F0 2.2K
R432 1.2K
ZD402 RD20ESB(3)
D406 1SS132
R434 1K
R433 1.5K
C434 0.068µ(H) 0.1µ(N)
R5F4 1K
D407 1SS132
R760 100 1/4W
R731 3.9K
C765 47µ 35V
D710 1SS132
D711 1SS132
C731 0.01µ 200V
R732 6.8K
D712 1SS82
R733 1M
D713 1SS82
R5D4 5.6K
R734 10K
C732 27P
R735 33K
R736 4.7K
Q703 2SC1740S Q.R.S

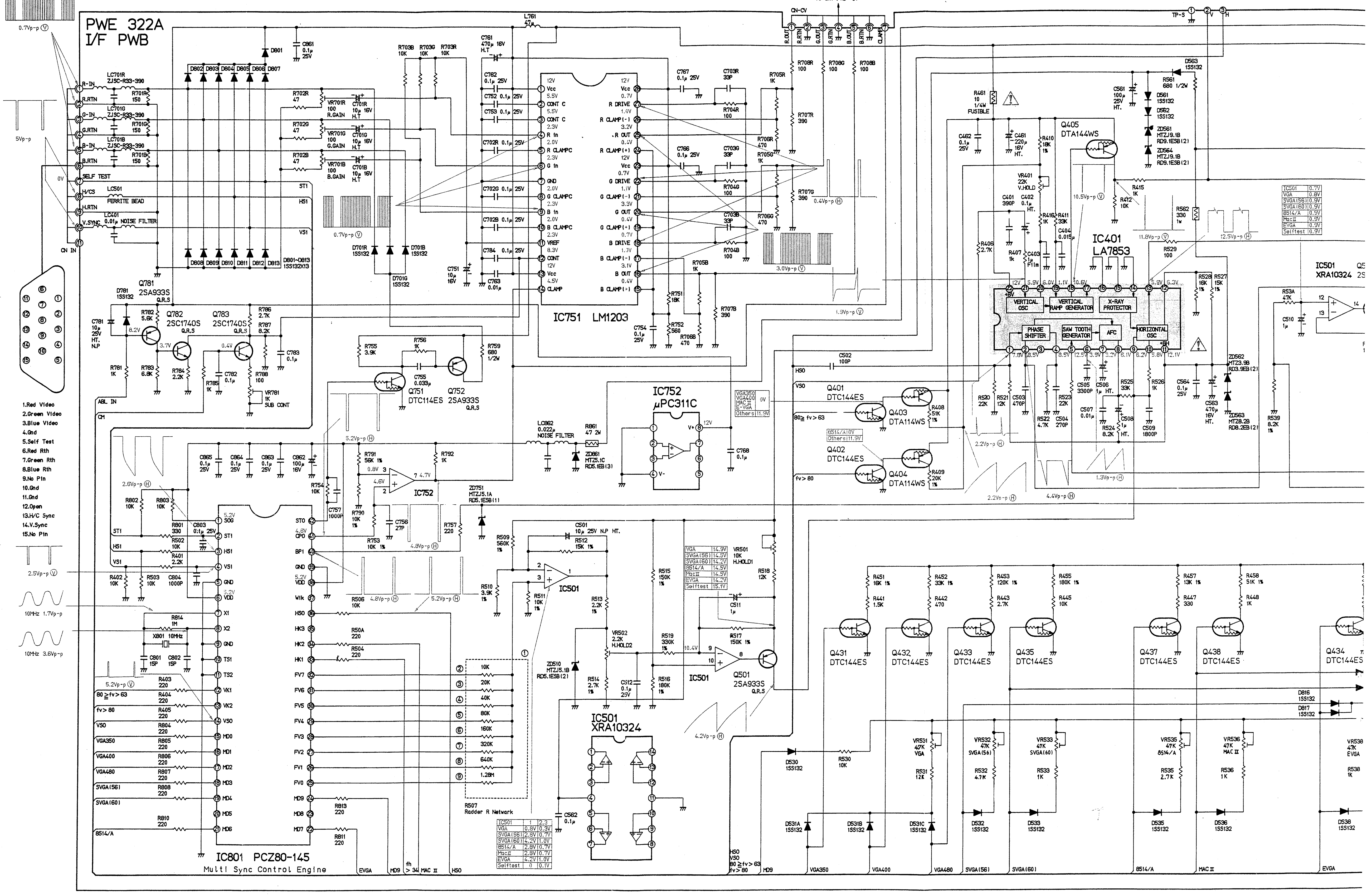
RUN NO.1



31.5KHz 650Vp-p
35KHz 650Vp-p
38KHz 600Vp-p
31.5KHz -16.7V
35KHz -16.7V
38KHz -16.9V
31.5KHz -16.3V
35KHz -16.3V
38KHz -14.4V
31.5KHz -3.5V
35KHz -3.5V
38KHz -2.7V
31.5KHz 26.7V
35KHz 26.7V
38KHz 23.9V
R5C1 22 1/4W
R5C0 10K
Q547 2SC1740S Q.R.S
Q548 2SA933S Q.R.S
Q549 2SK1217
Q546 2SC1740S R
Q551 2SK854
Q552 2SK949
R5C2 4.7 1/2W
R5F8 1K
R5H1 10K
R5H0 10K
C5C2 560P
13Vp-p Ⓗ
D540 RG2A2
C570 3600P 1.6KV
C571 7400P 1.6KV
C572 0.015μ 400V
R5C8 33K
R5C4 100
D54A 1SS132
C576 3.3μ
L506 50μH
L505 10mH
150V
HV.24KV
FOCUS
SCREEN
T504 SR.F.B.T
D541 TVR-06G
D542 TVR-06G
D543 TVR-06G
D547 TVR-06G
D544 TVR-06G
R5C5 2.2 1/4W
R5C6 2.2 1/4W
R5C7 2.2 1/4W
R5D6 1K 1/4W
R5CA 10K
C586 47μ
C578 47μ
C585 220μ 35V
16Vp-p Ⓗ
230Vp-p Ⓗ
2.2Vp-p Ⓥ
23.5V
ZD508 RD6.2ESB
C583 0.068
VR516 20K HV.ADJ
C581 10μ
R5C8 39K
IC504 μPC1093J
R5D0 390 2W
C582 10μ 25V N.P
R5D1 2.2 1/4W
D528 1SS82
R2012 8.2K
D2002 MA29W-A
VR2002 2K HV.PROT2
ZD2002 RD8.2JSB(1)
R2013 3.3K
C589 47μ
C592 0.1μ
R2010 8.2K
D2001 MA29W-A
VR2001 2K HV.PROT1
ZD2001 RD8.2JSB(1)
R2011 3.3K
D546 1SS132
240Vp-p Ⓗ
R5D2 270K 1%
0V PROT2
10V PROT2
26.9V PROT2
0V PROT1
10V PROT1
PROT1
GND
HEATER TP-H
6.3V
D2003 1SS132
R2001 27K
Q2001 2SA933S Q.R.S
D2004 1SS132
R2005 27K
R2002 12K
R2006 12K
Q2002 2SC1740S Q.R.S
Q2003 2SA933S Q.R.S
R2003 100
Q2004 2SC1740S Q.R.S
R2007 100
R2004 10K
C2001 220μ 10V HT
C2002 470μ 10V HT
R2008 10K
3Vp-p Ⓥ
R5E1 2.2 1/2W
C579 100μ 10V HT
R5E3 10K
C580 3.3μ 250V
C568 10μ 250V
R5H2 1M
Q570 2SA1018 Q.R
R5E4 270K
R5E0 10K
C593 10μ
24Vp-p Ⓥ
24Vp-p Ⓥ
22Vp-p Ⓥ
Q701 2SC1740S Q.R.S
Q702 2SC1740S Q.R.S
R760 100 1/4W
C765 47μ 35V
R731 3.9K
R5E5 100K
C5A1 10μ 250V
D549 1SS82
D548 1SS132
C5A0 47μ 35V
R5E6 10K
Q573 2SA933S Q.R.S
R5E7 10K
Q574 2SC1473 Q.R
R5E8 47K
R5E9 1K
C567 100μ 16V HT
12HF
C5A2 1500P 500V
R5F0 2.2K
1.5Vp-p Ⓥ
R432 1.2K
ZD402 RD20ESB(3)
D406 1SS132
R434 1K
R433 1.5K
C434 0.068μ(H) 0.1μ(N)
R5F4 1K
D407 1SS132
D710 1SS132
D711 1SS132
R732 6.8K
C731 0.01μ 200V
D712 1SS82
R733 1M
D713 1SS82
R734 10K
C732 27P
R735 33K
R736 4.7K
Q703 2SC1740S Q.R.S
R5D4 5.6K
22Vp-p Ⓗ
GND
6.3V HEATER
G1
12V
N.C
80V
N.C
N.C
150V
CN-X
TO CRT PWB "X"

78164381

MODEL JC-1521HMB/R(SUB PWB) SCHEMATIC DIAGRAM


PWE 322A
I/F PWB
0.7Vp-p Ⓥ
5Vp-p
0V
CN IN
R-IN
R.RTN
G-IN
G.RTN
B-IN
B.RTN
SELF TEST
H/CS
H.RTN
V.SYNC
LC701R ZJSC-R33-390
LC701G ZJSC-R33-390
LC701B ZJSC-R33-390
LC501 FERRITE BEAD
LC401 0.01μ NOISE FILTER
R701R 150
R701G 150
R701B 150
1.Red Video
2.Green Video
3.Blue Video
4.Gnd
5.Self Test
6.Red Rth
7.Green Rth
8.Blue Rth
9.No Pin
10.Gnd
11.Gnd
12.Open
13.H/C Sync
14.V.Sync
15.No Pin
2.5Vp-p Ⓥ
10MHz 1.7Vp-p
10MHz 3.6Vp-p
D801
D802 D803 D804 D805 D806 D807
D808 D809 D810 D811 D812 D813
D801~D813 1SS132X13
VR701R 100 R.GAIN
VR701G 100 G.GAIN
VR701B 100 B.GAIN
C701R 10μ 16V H.T
C701G 10μ 16V H.T
C701B 10μ 16V H.T
D701R 1SS132
D701B 1SS132
D701G 1SS132
L761 47μ
C761 470μ 16V H.T
IC751 LM1203
12V Vcc
CONT C
R In
R CLAMPC
G In
GND
G CLAMPC
B In
B CLAMPC
VREF
CONT
Vcc
CLAMP
R DRIVE
R CLAMP(−)
R OUT
R CLAMP(+)
G DRIVE
G CLAMP(−)
G OUT
G CLAMP(+)
B DRIVE
B CLAMP(−)
B OUT
B CLAMP(+)
TO CRT PWB "CV"
CN-CV
R.OUT
R.RTN
G.OUT
G.RTN
B.OUT
B.RTN
CLAMP
R708R 100
R708G 100
R708B 100
R707R 390
R707G 390
R707B 390
0.4Vp-p Ⓗ
3.0Vp-p Ⓥ
1.5Vp-p Ⓥ
Q781 2SA933S Q.R.S
Q782 2SC1740S Q.R.S
Q783 2SC1740S Q.R.S
D781 1SS132
VR781 1K SUB CONT
ABL IN
CM
Q751 DTC114ES
Q752 2SA933S Q.R.S
IC752 μPC311C
LC862 0.022μ NOISE FILTER
R861 47 2W
ZD861 MTZ5.1C RD5.1EB(3)
ZD751 MTZ5.1A RD5.1ESB(1)
5.2Vp-p Ⓗ
2.6Vp-p Ⓗ
4.8Vp-p Ⓗ
5.2Vp-p Ⓗ
5.2Vp-p Ⓥ
IC801 PCZ80-145
Multi Sync Control Engine
STO
CPO
BP1
GND
VDD
Wlk
HSO
HK3
HK2
HK1
FV7
FV6
FV5
FV4
FV3
FV2
FV1
FV0
MD9
MD8
MD7
SOG
ST1
HS1
VS1
X1
X2
TS1
TS2
VK1
VK2
VSO
MD0
MD1
MD2
MD3
MD4
MD5
MD6
X801 10MHz
80 ≧ fv > 63
fv > 80
VGA350
VGA400
VGA480
SVGA(56)
SVGA(60)
8514/A
EVGA
MD9
fh > 34
MAC II
HSO
10K
20K
40K
80K
160K
320K
640K
1.28M
R507
Radder R Network
IC501 XRA10324
C501 10μ 25V N.P HT.
VR501 10K H.HOLD1
VR502 2.2K H.HOLD2
ZD510 MTZJ5.1B RD5.1ESB(2)
Q501 2SA933S Q.R.S
4.2Vp-p Ⓗ
HSO
VSO
80 ≧ fv > 63
fv > 80
Q401 DTC144ES
Q402 DTC144ES
Q403 DTA114WS
Q404 DTA114WS
Q405 DTA144WS
IC401 LA7853
VERTICAL OSC
VERTICAL RAMP GENERATOR
X-RAY PROTECTOR
PHASE SHIFTER
SAW TOOTH GENERATOR
AFC
HORIZONTAL OSC
R461 10 1/4W FUSIBLE
VR401 22K V.HOLD
10.5Vp-p Ⓥ
11.8Vp-p Ⓥ
12.5Vp-p Ⓗ
2.2Vp-p Ⓗ
2.2Vp-p Ⓗ
4.4Vp-p Ⓗ
1.3Vp-p Ⓗ
TP-S
R561 680 1/2W
D561 1SS132
D562 1SS132
D563 1SS132
ZD561 MTZJ9.1B RD9.1ESB(2)
ZD564 MTZJ9.1B RD9.1ESB(2)
ZD562 MTZ3.9B RD3.9EB(2)
ZD563 MTZ8.2B RD8.2EB(2)
R562 330 1W
IC501 XRA10324
Q431 DTC144ES
Q432 DTC144ES
Q433 DTC144ES
Q435 DTC144ES
Q437 DTC144ES
Q438 DTC144ES
Q434 DTC144ES
VR531 47K VGA
VR532 47K SVGA(56)
VR533 47K SVGA(60)
VR535 47K 8514/A
VR536 47K MAC II
VR538 47K EVGA
D530 1SS132
D531A 1SS132
D531B 1SS132
D531C 1SS132
D532 1SS132
D533 1SS132
D535 1SS132
D536 1SS132
D538 1SS132
D816 1SS132
D817 1SS132
VGA350
VGA400
VGA480
SVGA(56)
SVGA(60)
8514/A
MAC II
EVGA

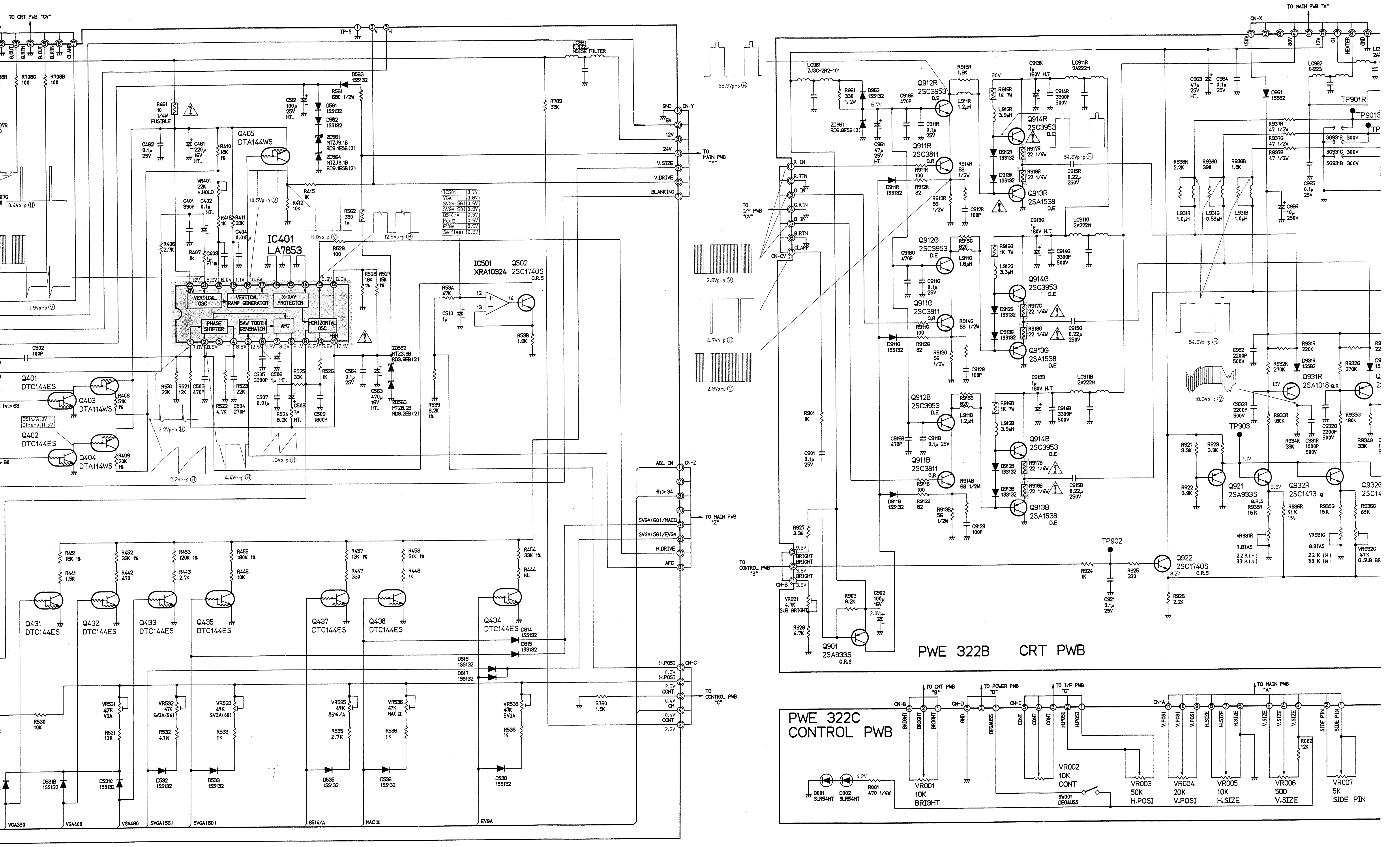
VGA350 VGA400 MAC II E-VGA	0V
Others	11.9V

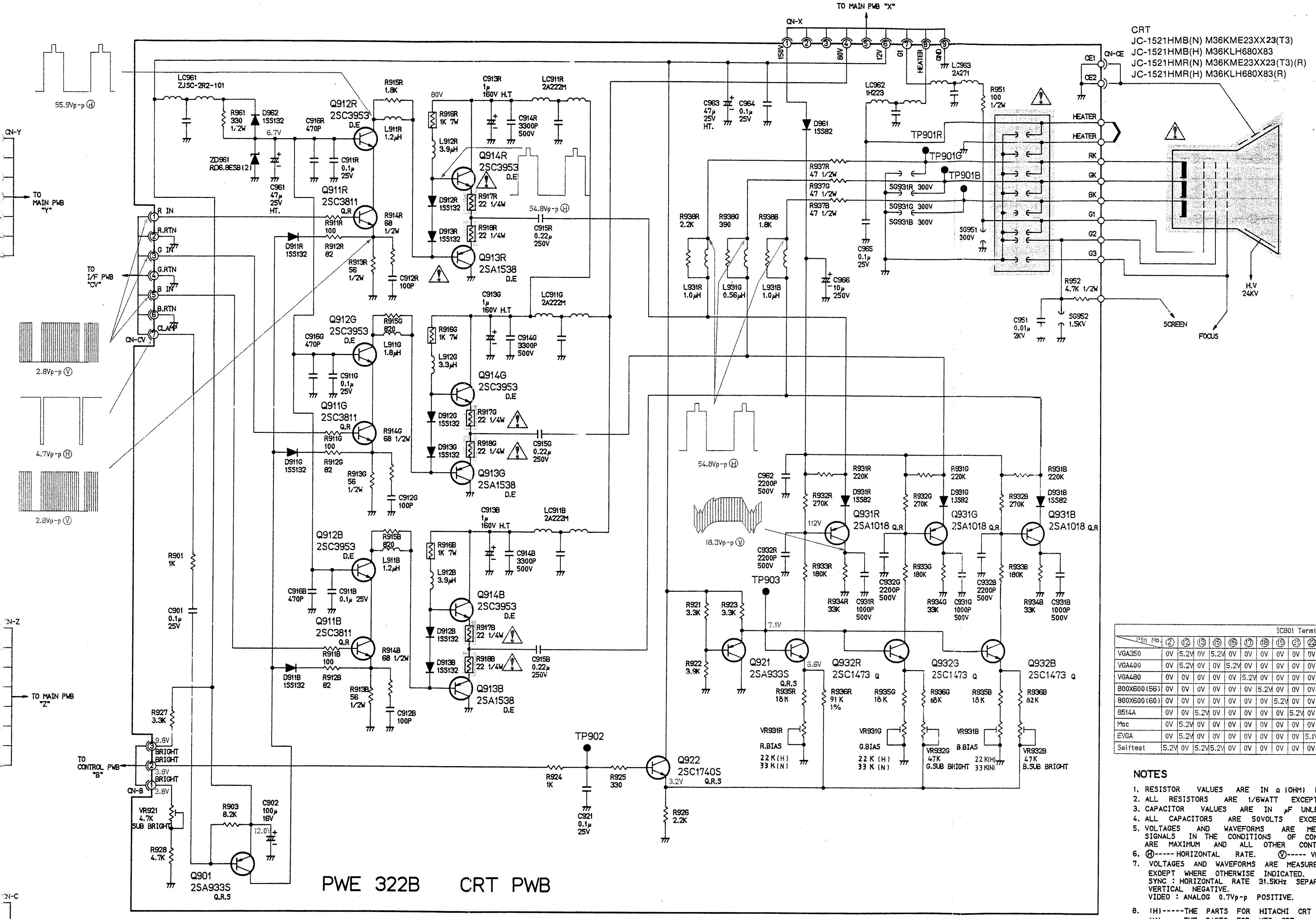
8514/A	10V
Others	11.9V

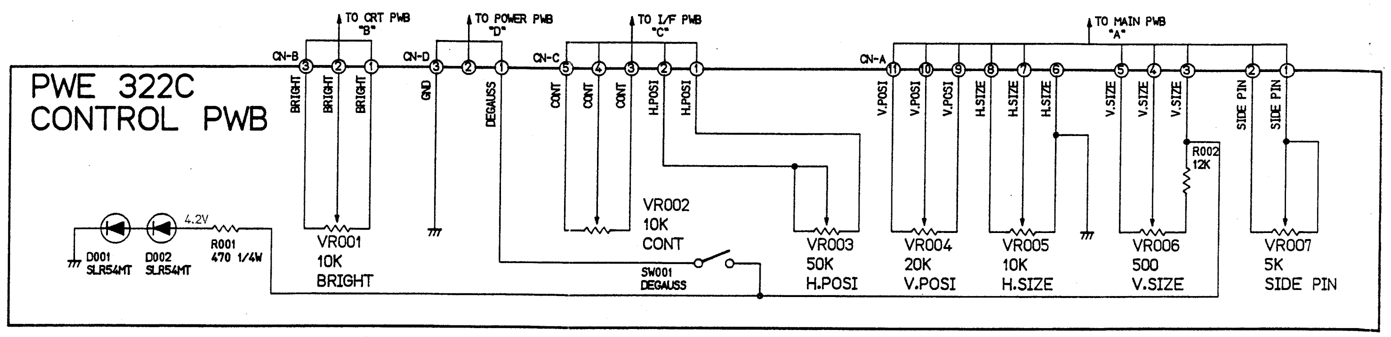
VGA	14.9V
SVGA(56)	14.5V
SVGA(60)	14.2V
8514/A	14.5V
MacII	14.5V
EVGA	14.2V
Selftest	15.1V

IC501	1	2.3
VGA	0.8V	0.3V
SVGA(56)	2.8V	0.7V
SVGA(60)	4.2V	1.0V
8514/A	2.8V	0.7V
MacII	2.8V	0.7V
EVGA	4.2V	1.0V
Selftest	0	0.1V

IC501	0.7V
VGA	0.8V
SVGA(56)	0.9V
SVGA(60)	0.9V
8514/A	0.9V
MacII	0.9V
EVGA	0.9V
Selftest	0.9V


TO CRT PWB "CV"
G.OUT
G.RTN
B.OUT
B.RTN
CLAMP
R708G 100
R708B 100
0.4Vp-p Ⓗ
1.9Vp-p Ⓥ
TP-5
R461 10 1/4W FUSIBLE
C462 0.1μ 25V
C461 220μ 16V HT.
R410 18K 1%
Q405 DTA144WS
VR401 22K V.HOLD
C401 390P
C402 0.1μ HT.
R416 1K
R411 33K
C404 0.015μ
R406 2.7K
R407 1k
C403 1μ F11m
10.5Vp-p Ⓥ
R415 1K
R412 10K
C561 100μ 25V HT.
D563 1SS132
R561 680 1/2W
D561 1SS132
D562 1SS132
ZD561 MTZJ9.1B RD9.1ESB(2)
ZD564 MTZJ9.1B RD9.1ESB(2)
R562 330 1W
R529 100
11.8Vp-p Ⓥ
12.5Vp-p Ⓗ
IC401 LA7853
VERTICAL OSC
VERTICAL RAMP GENERATOR
X-RAY PROTECTOR
PHASE SHIFTER
SAW TOOTH GENERATOR
AFC
HORIZONTAL OSC
R528 16K 1%
R527 15K 1%
ZD562 MTZ3.9B RD3.9EB(2)
ZD563 MTZ8.2B RD8.2EB(2)
C563 470μ 16V HT.
C564 0.1μ 25V
C502 100P
Q401 DTC144ES
Q403 DTA114WS
Q402 DTC144ES
Q404 DTA114WS
R408 51K 1%
R409 20K 1%
8514/A 0V
Others 11.9V
R520 22K
R521 12K
C503 470P
R522 4.7K
C504 270P
R523 22K
C505 3300P
C506 1μ HT.
C507 0.01μ
R524 8.2K
C508 1μ HT.
R525 33K
R526 1K
C509 1800P
2.2Vp-p Ⓗ
4.4Vp-p Ⓗ
1.3Vp-p Ⓗ
IC501 0.7V
VGA 0.8V
SVGA(56) 0.9V
SVGA(60) 0.9V
8514/A 0.9V
MacII 0.5V
EVGA 0.9V
Selftest 0.9V
IC501 XRA10324
Q502 2SC1740S Q.R.S
R53A 47K
C510 1μ
R538 1.8K
R539 8.2K 1%
LC861 0.022μ NOISE FILTER
R789 33K
CN-Y
GND
6V
12V
24V
V.SIZE
V.DRIVE
BLANKING
TO MAIN PWB "Y"
CN-Z
ABL IN
fh>34
SVGA(60)/MACII
SVGA(56)/EVGA
H.DRIVE
AFC
TO MAIN PWB "Z"
R451 16K 1%
R452 33K 1%
R453 120K 1%
R455 180K 1%
R457 13K 1%
R458 51K 1%
R454 33K 1%
R441 1.5K
R442 470
R443 2.7K
R445 10K
R447 330
R448 1K
R444 NL
Q431 DTC144ES
Q432 DTC144ES
Q433 DTC144ES
Q435 DTC144ES
Q437 DTC144ES
Q438 DTC144ES
Q434 DTC144ES
D814 1SS132
D815 1SS132
D816 1SS132
D817 1SS132
CN-C
H.POSI
CONT
CH
TO CONTROL PWB "C"
R780 1.5K
R530 10K
VR531 47K VGA
R531 12K
VR532 47K SVGA(56)
R532 4.7K
VR533 47K SVGA(60)
R533 1K
VR535 47K 8514/A
R535 2.7K
VR536 47K MAC II
R536 1K
VR538 47K EVGA
R538 1K
D531B 1SS132
D531C 1SS132
D532 1SS132
D533 1SS132
D535 1SS132
D536 1SS132
D538 1SS132
VGA350
VGA400
VGA480
SVGA(56)
SVGA(60)
8514/A
MAC II
EVGA
55.9Vp-p Ⓗ
2.8Vp-p Ⓥ
4.7Vp-p Ⓗ
2.8Vp-p Ⓥ
TO I/F PWB "CV"
CN-CV
R IN
R.RTN
G IN
G.RTN
B IN
B.RTN
CLAMP
LC961 ZJSC-2R2-101
R961 330 1/2W
D962 1SS132
ZD961 RD6.8ESB(2)
C961 47μ 25V HT.
C916R 470P
Q912R 2SC3953 D.E
Q911R 2SC3811 Q.R
R915R 1.8K
L911R 1.2μH
R914R 68 1/2W
R911R 100
R912R 82
R913R 56 1/2W
C911R 0.1μ 25V
C912R 100P
D911R 1SS132
80V
R916R 1K 7W
L912R 3.9μH
C913R 1μ 160V H.T
C914R 3300P 500V
LC911R 2A222M
Q914R 2SC3953 D.E
Q913R 2SA1538 D.E
D912R 1SS132
D913R 1SS132
R917R 22 1/4W
R918R 22 1/4W
C915R 0.22μ 250V
54.8Vp-p Ⓗ
Q912G 2SC3953 D.E
Q911G 2SC3811 Q.R
C916G 470P
R915G 820
L911G 1.8μH
R914G 68 1/2W
R911G 100
R912G 82
R913G 56 1/2W
C911G 0.1μ 25V
C912G 100P
D911G 1SS132
R916G 1K 7W
L912G 3.3μH
C913G 1μ 160V H.T
C914G 3300P 500V
LC911G 2A222M
Q914G 2SC3953 D.E
Q913G 2SA1538 D.E
D912G 1SS132
D913G 1SS132
R917G 22 1/4W
R918G 22 1/4W
C915G 0.22μ 250V
Q912B 2SC3953 D.E
Q911B 2SC3811 Q.R
C916B 470P
R915B 820
L911B 1.2μH
R914B 68 1/2W
R911B 100
R912B 82
R913B 56 1/2W
C911B 0.1μ 25V
C912B 100P
D911B 1SS132
R916B 1K 7W
L912B 3.9μH
C913B 1μ 160V H.T
C914B 3300P 500V
LC911B 2A222M
Q914B 2SC3953 D.E
Q913B 2SA1538 D.E
D912B 1SS132
D913B 1SS132
R917B 22 1/4W
R918B 22 1/4W
C915B 0.22μ 250V
R901 1K
C901 0.1μ 25V
R927 3.3K
R928 4.7K
VR921 4.7K SUB BRIGHT
R903 8.2K
C902 100μ 16V
Q901 2SA933S Q.R.S
TO CONTROL PWB "B"
CN-B
BRIGHT
TP902
R924 1K
C921 0.1μ 25V
R925 330
Q922 2SC1740S Q.R.S
R926 2.2K
PWE 322B CRT PWB
TO MAIN PWB "X"
CN-X
150V
80V
12V
G1
HEATER
GND
C963 47μ 25V HT.
C964 0.1μ 25V
D961 1SS82
LC962 1H223
TP901R
TP901G
R937R 47 1/2W
R937G 47 1/2W
R937B 47 1/2W
SG931R 300V
SG931G 300V
SG931B 300V
R938R 2.2K
R938G 390
R938B 1.8K
L931R 1.0μH
L931G 0.56μH
L931B 1.0μH
C965 0.1μ 250V
C966 10μ 250V
54.8Vp-p Ⓗ
18.3Vp-p Ⓥ
C962 2200P 500V
R931R 220K
D931R 1SS82
R932R 270K
R932G 270K
Q931R 2SA1018 Q.R
C932R 2200P 500V
C932G 2200P 500V
R933R 180K
R933G 180K
R934R 33K
C931R 1000P 500V
R934G 33K
TP903
R921 3.3K
R923 3.3K
R922 3.9K
Q921 2SA933S Q.R.S
Q932R 2SC1473 Q
Q932G 2SC14
R935R 18K
R936R 91K 1%
R935G 18K
R936G 68K
VR931R R.BIAS 22K(H) 33K(N)
VR931G G.BIAS 22K(H) 33K(N)
VR932G 47K G.SUB BR
PWE 322C CONTROL PWB
TO CRT PWB "B"
TO POWER PWB "D"
TO I/F PWB "C"
TO MAIN PWB "A"
CN-B
CN-D
CN-C
CN-A
DEGAUSS
CONT
H.POSI
V.POSI
H.SIZE
V.SIZE
SIDE PIN
R002 12K
D001 SLR54MT
D002 SLR54MT
4.2V
R001 470 1/4W
VR001 10K BRIGHT
VR002 10K CONT
SW001 DEGAUSS
VR003 50K H.POSI
VR004 20K V.POSI
VR005 10K H.SIZE
VR006 500 V.SIZE
VR007 5K SIDE PIN


TO MAIN PWB "X"
CN-X
150V
80V
12V
G1
HEATER
GND
CRT
JC-1521HMB(N) M36KME23XX23(T3)
JC-1521HMB(H) M36KLH680X83
JC-1521HMR(N) M36KME23XX23(T3)(R)
JC-1521HMR(H) M36KLH680X83(R)
CN-CE
CE1
CE2
HEATER
HEATER
RK
GK
BK
G1
G2
G3
H.V
24KV
SCREEN
FOCUS
55.9Vp-p Ⓗ
CN-Y
TO MAIN PWB "Y"
TO I/F PWB "CV"
R IN
R.RTN
G IN
G.RTN
B IN
B.RTN
CLAMP
CN-CV
2.8Vp-p Ⓥ
4.7Vp-p Ⓗ
2.8Vp-p Ⓥ
CN-Z
TO MAIN PWB "Z"
TO CONTROL PWB "B"
BRIGHT
BRIGHT
BRIGHT
CN-B
CN-C
TO CONTROL PWB "C"
LC961 ZJSC-2R2-101
R961 330 1/2W
D962 1SS132
ZD961 RD6.8ESB(2)
C961 47µ 25V HT.
C916R 470P
C911R 0.1µ 25V
Q912R 2SC3953 D.E
Q911R 2SC3811 Q.R
R915R 1.8K
L911R 1.2µH
R911R 100
R912R 82
R913R 56 1/2W
R914R 68 1/2W
C912R 100P
D911R 1SS132
R916R 1K 7W
L912R 3.9µH
Q914R 2SC3953 D.E
D912R 1SS132
R917R 22 1/4W
D913R 1SS132
R918R 22 1/4W
Q913R 2SA1538 D.E
C913R 1µ 160V H.T
C914R 3300P 500V
LC911R 2A222M
C915R 0.22µ 250V
54.8Vp-p Ⓗ
60V
6.7V
Q912G 2SC3953 D.E
C916G 470P
R915G 820
L911G 1.8µH
C911G 0.1µ 25V
Q911G 2SC3811 Q.R
R911G 100
R912G 82
R913G 56 1/2W
R914G 68 1/2W
C912G 100P
D911G 1SS132
R916G 1K 7W
L912G 3.3µH
Q914G 2SC3953 D.E
D912G 1SS132
R917G 22 1/4W
D913G 1SS132
R918G 22 1/4W
Q913G 2SA1538 D.E
C913G 1µ 160V H.T
C914G 3300P 500V
LC911G 2A222M
C915G 0.22µ 250V
Q912B 2SC3953 D.E
C916B 470P
C911B 0.1µ 25V
R915B 820
L911B 1.2µH
Q911B 2SC3811 Q.R
R911B 100
R912B 82
R913B 56 1/2W
R914B 68 1/2W
C912B 100P
D911B 1SS132
R916B 1K 7W
L912B 3.9µH
Q914B 2SC3953 D.E
D912B 1SS132
R917B 22 1/4W
D913B 1SS132
R918B 22 1/4W
Q913B 2SA1538 D.E
C913B 1µ 160V H.T
C914B 3300P 500V
LC911B 2A222M
C915B 0.22µ 250V
R901 1K
C901 0.1µ 25V
R927 3.3K
9.8V
3.8V
3.8V
VR921 4.7K SUB BRIGHT
R928 4.7K
R903 8.2K
C902 100µ 16V
12.0V
Q901 2SA933S Q.R.S
PWE 322B CRT PWB
C963 47µ 25V HT.
C964 0.1µ 25V
D961 1SS82
LC962 1H223
LC963 2A271
R951 100 1/2W
TP901R
TP901G
TP901B
R937R 47 1/2W
R937G 47 1/2W
R937B 47 1/2W
SG931R 300V
SG931G 300V
SG931B 300V
SG951 300V
C965 0.1µ 25V
C966 10µ 250V
R952 4.7K 1/2W
C951 0.01µ 2KV
SG952 1.5KV
R938R 2.2K
R938G 390
R938B 1.8K
L931R 1.0µH
L931G 0.56µH
L931B 1.0µH
54.8Vp-p Ⓗ
C962 2200P 500V
C932R 2200P 500V
18.3Vp-p Ⓥ
112V
R931R 220K
D931R 1SS82
R932R 270K
Q931R 2SA1018 Q.R
R933R 180K
R934R 33K
C931R 1000P 500V
C932G 2200P 500V
R931G 220K
D931G 1SS82
R932G 270K
Q931G 2SA1018 Q.R
R933G 180K
R934G 33K
C931G 1000P 500V
C932B 2200P 500V
R931B 220K
D931B 1SS82
R932B 270K
Q931B 2SA1018 Q.R
R933B 180K
R934B 33K
C931B 1000P 500V
TP903
R921 3.3K
R923 3.3K
7.1V
R922 3.9K
Q921 2SA933S Q.R.S
R935R 18K
6.6V
Q932R 2SC1473 Q
R936R 91K 1%
Q932G 2SC1473 Q
R935G 18K
R936G 68K
Q932B 2SC1473 Q
R935B 18K
R936B 82K
VR931R R.BIAS 22K(H) 33K(N)
VR931G G.BIAS 22K(H) 33K(N)
VR932G 47K G.SUB BRIGHT
VR931B B.BIAS 22K(H) 33K(N)
VR932B 47K B.SUB BRIGHT
TP902
R924 1K
C921 0.1µ 25V
R925 330
Q922 2SC1740S Q.R.S
3.2V
R926 2.2K


PWE 322C CONTROL PWB
TO CRT PWB "B"
TO POWER PWB "D"
TO I/F PWB "C"
TO MAIN PWB "A"
CN-B
CN-D
CN-C
CN-A
BRIGHT
BRIGHT
BRIGHT
GND
DEGAUSS
CONT
CONT
CONT
H.POSI
H.POSI
V.POSI
V.POSI
V.POSI
H.SIZE
H.SIZE
H.SIZE
V.SIZE
V.SIZE
V.SIZE
SIDE PIN
SIDE PIN
VR001 10K BRIGHT
VR002 10K CONT
SW001 DEGAUSS
VR003 50K H.POSI
VR004 20K V.POSI
VR005 10K H.SIZE
VR006 500 V.SIZE
R002 12K
VR007 5K SIDE PIN
D001 SLR54MT
D002 SLR54MT
4.2V
R001 470 1/4W

IC801 Terminal Voltage

Pin No.	②	⑫	⑬	⑮	⑯	⑰	⑱	⑲	㉑	㉒	㉔	㉕	㉖	㉗	㉘	㉙	㉚	㉛	㉜	㉝	㉞	㊷
VGA350	0V	5.2V	0V	5.2V	0V	0V	0V	0V	0V	0V	0V	0V	0V	5.2V	0V	5.2V	0V	0V	0V	0V	0V	0V
VGA400	0V	5.2V	0V	0V	5.2V	0V	0V	0V	0V	0V	0V	0V	0V	5.2V	0V	5.2V	0V	0V	0V	0V	0V	0V
VGA480	0V	0V	0V	0V	0V	5.2V	0V	0V	0V	0V	0V	0V	0V	5.2V	0V	5.2V	0V	0V	0V	0V	0V	0V
800X600(56)	0V	0V	0V	0V	0V	0V	5.2V	0V	0V	0V	0V	0V	5.2V	0V	0V	5.2V	5.2V	0V	0V	5.2V	0V	0V
800X600(60)	0V	0V	0V	0V	0V	0V	0V	5.2V	0V	0V	0V	5.2V	5.2V	5.2V	0V	0V	0V	5.2V	0V	5.2V	0V	0V
8514A	0V	0V	5.2V	0V	0V	0V	0V	0V	5.2V	0V	0V	0V	5.2V	0V	0V	5.2V	5.2V	0V	0V	5.2V	0V	0V
Mac	0V	5.2V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	5.2V	0V	0V	5.2V	5.2V	0V	0V	5.2V	5.1V	0V
EVGA	0V	5.2V	0V	0V	0V	0V	0V	0V	0V	5.1V	0V	5.2V	5.2V	5.2V	0V	0V	0V	5.2V	0V	5.2V	0V	0V
Selftest	5.2V	0V	5.2V	5.2V	0V	0V	0V	0V	0V	0V	5.2V	0V	0V	0V	5.2V	0V	0V	0V	0V	0V	0V	4.4V

NOTES

1. RESISTOR VALUES ARE IN Ω (OHM) K = 1,000Ω M = 1,000,000Ω
2. ALL RESISTORS ARE 1/6WATT EXCEPT WHERE OTHERWISE INDICATED.
3. CAPACITOR VALUES ARE IN µF UNLESS OTHERWISE INDICATED. P = PF
4. ALL CAPACITORS ARE 50VOLTS EXCEPT WHERE OTHERWISE INDICATED.
5. VOLTAGES AND WAVEFORMS ARE MEASURED UNDER THE CHARACTER SIGNALS IN THE CONDITIONS OF CONTRAST AND BRIGHTNESS CONTROLS ARE MAXIMUM AND ALL OTHER CONTROLS ARE NORMAL OPERATION.
6. Ⓗ----- HORIZONTAL RATE. Ⓥ----- VERTICAL RATE.
7. VOLTAGES AND WAVEFORMS ARE MEASURED UNDER THE FOLLOWING SYNC AND VIDEO. EXOEPT WHERE OTHERWISE INDICATED.
   SYNC : HORIZONTAL RATE 31.5KHz SEPARATE SYNC. TTL LEVEL HORIZONTAL NEGATIVE VERTICAL NEGATIVE.
   VIDEO : ANALOG 0.7Vp-p POSITIVE.
8. (H)-----THE PARTS FOR HITACHI CRT
   (N)-----THE PARTS FOR NEC CRT

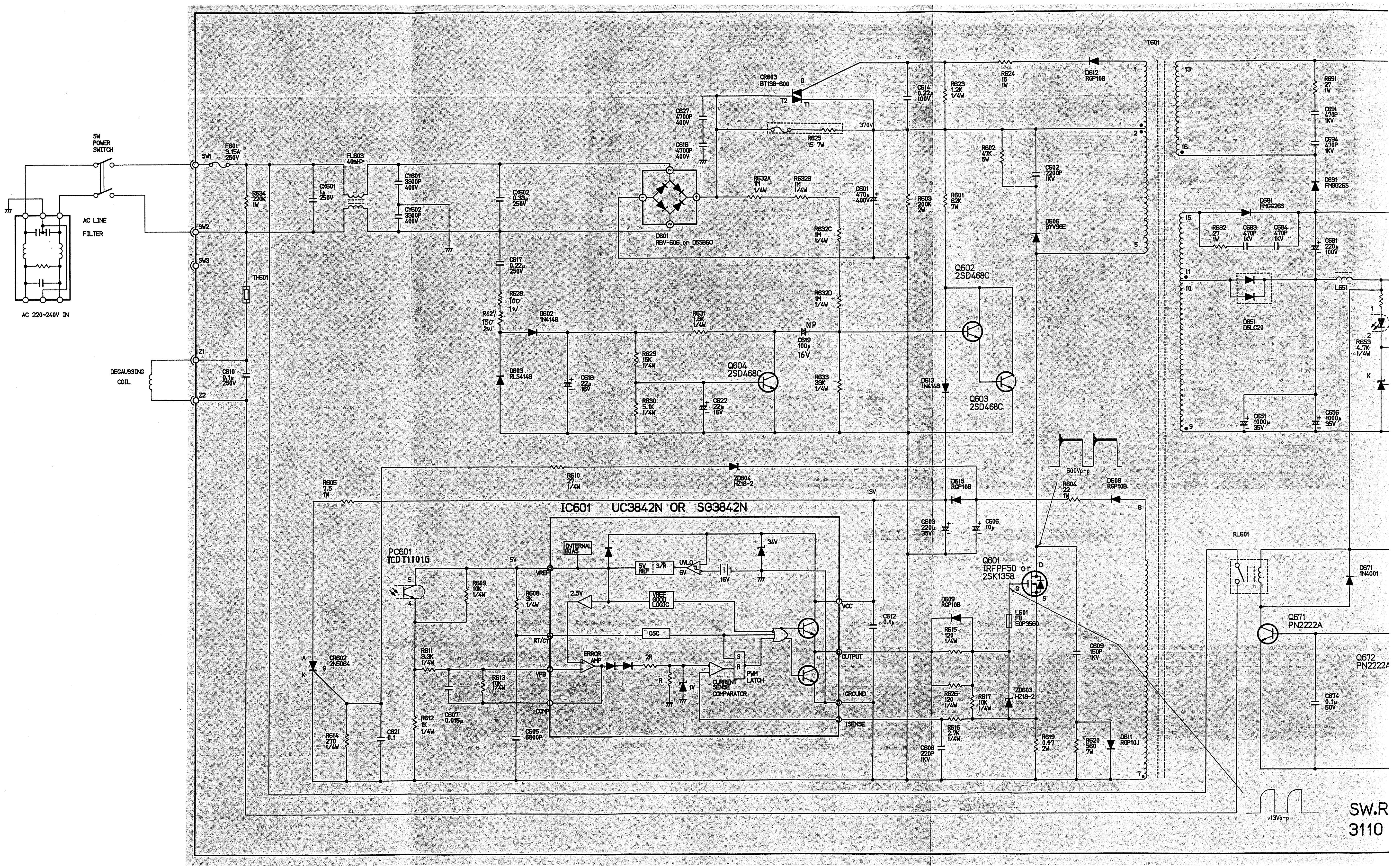
WARNING

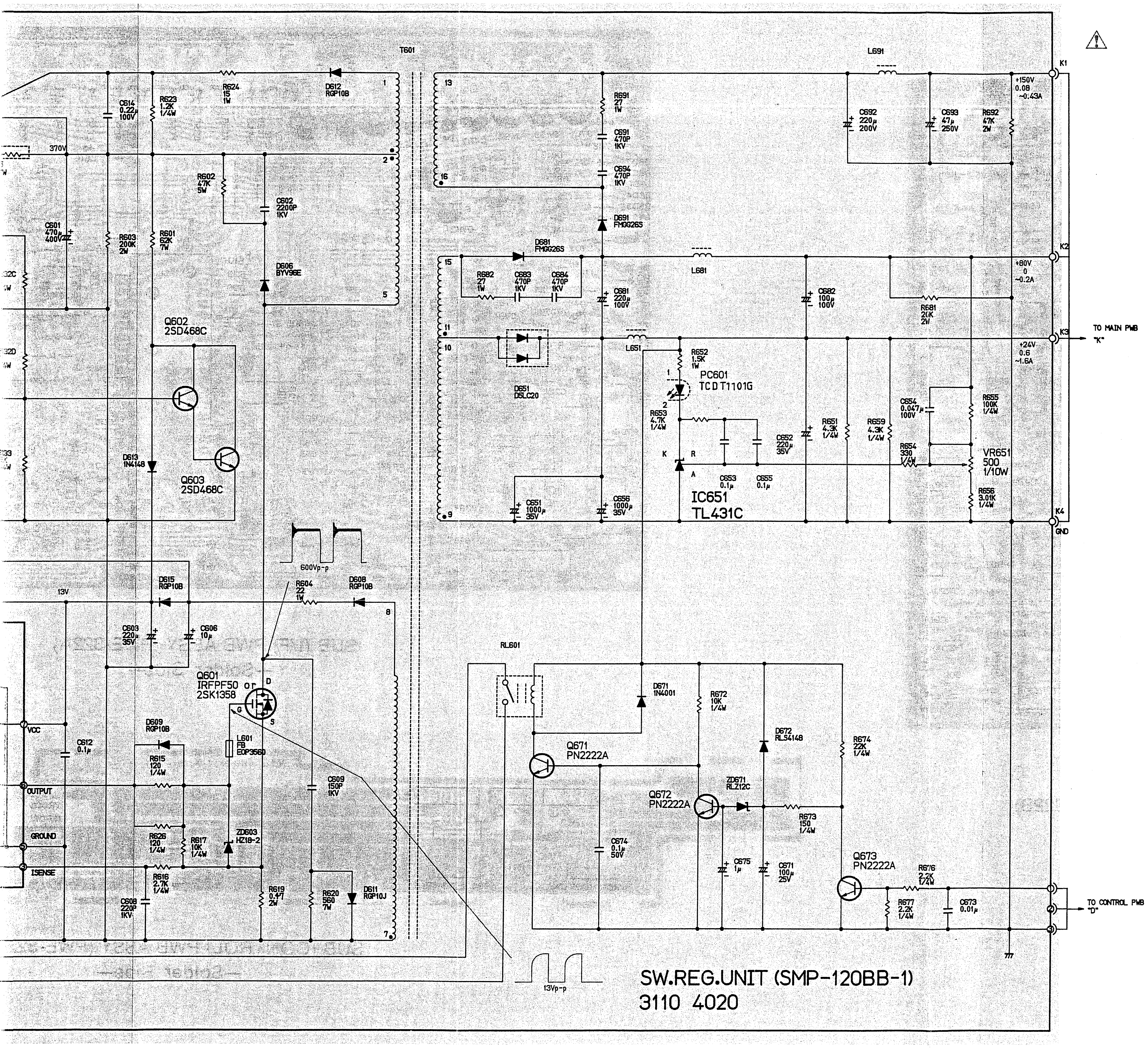
REPLACEMENT PARTS WHICH HAVE SPECIAL SAFETY CHARACTERISTICS ARE IDENTIFIED BY ⚠ SHADING ON THE SCHEMATICS. REPLACE THESE CRITICAL COMPONENTS WITH RECOMMENDED REPLACEMENT PARTS.

DON'T DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.

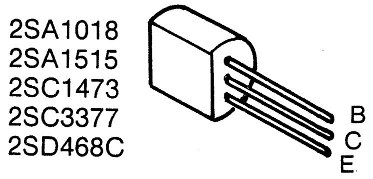
CONTROL (S) MARKED ✱ IS PERMANENTLY FROZEN.
DO NOT ATTEMPT TO DEFEAT OR IMPROPERLY REPLACE.

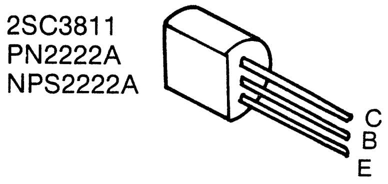
MODEL JC-1521HMB/R (SW REG PWB)
SCHEMATIC DIAGRM

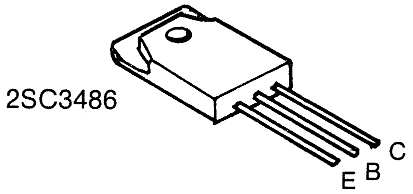

SW POWER SWITCH
AC LINE FILTER
AC 220-240V IN
DEGAUSSING COIL
SW1
SW2
SW3
Z1
Z2
F601 3.15A 250V
R634 220K 1W
TH601
C610 0.1μ 250V
CX601 1μ 250V
FL603 40mH
CY601 3300P 400V
CY602 3300P 400V
CX602 0.33μ 250V
C617 0.22μ 250V
R628 100 1W
R627 150 2W
D602 1N4148
D603 RLS4148
C618 22μ 16V
C627 4700P 400V
C616 4700P 400V
CR603 BT138-600
G
T2
T1
R625 15 7W
370V
D601 RBV-606 or D5SB60
R632A 1M 1/4W
R632B 1M 1/4W
R632C 1M 1/4W
R632D 1M 1/4W
C601 470μ 400V
R631 1.8K 1/4W
NP
C619 100μ 16V
R629 15K 1/4W
R630 5.1K 1/4W
C622 22μ 16V
Q604 2SD468C
R633 33K 1/4W
C614 0.22μ 100V
R623 1.2K 1/4W
R624 15 1W
D612 RGP10B
R603 200K 2W
R601 62K 7W
R602 47K 5W
C602 2200P 1KV
D606 BYV96E
Q602 2SD468C
Q603 2SD468C
D613 1N4148
T601
1
2
5
7
8
9
10
11
13
15
16
R691 27 1W
C691 470P 1KV
C694 470P 1KV
D691 FMG26S
D681 FMG26S
R682 27 1W
C683 470P 1KV
C684 470P 1KV
C681 220μ 100V
D651 D5LC20
L651
R653 4.7K 1/4W
K
C651 1000μ 35V
C656 1000μ 35V
R610 27 1/4W
ZD604 HZ18-2
R605 7.5 1W
13V
D615 RGP10B
C603 220μ 35V
C606 10μ
600Vp-p
R604 22 1W
D608 RGP10B
IC601 UC3842N OR SG3842N
PC601 TCDT1101G
5V
INTERNAL BIAS
5V REF
S/R
UVLO
6V
16V
34V
VREF
R609 10K 1/4W
R608 3K 1/4W
2.5V
VREF GOOD LOGIC
VCC
OSC
RT/CT
ERROR AMP
2R
R
1V
S
R
PWM LATCH
CURRENT SENSE COMPARATOR
OUTPUT
GROUND
ISENSE
VFB
COMP
R611 3.3K 1/4W
R613 10K 1/4W
C607 0.015μ
C605 6800P
R612 1K 1/4W
CR602 2N5064
A
K
G
R614 270 1/4W
C621 0.1
C612 0.1μ
Q601 IRFPF50 or 2SK1358
D
G
S
D609 RGP10B
R615 120 1/4W
L601 FB EOP3560
C609 150P 1KV
R626 120 1/4W
R617 10K 1/4W
ZD603 HZ18-2
R616 2.7K 1/4W
C608 220P 1KV
R619 0.47 2W
R620 560 7W
D611 RGP10J
RL601
D671 1N4001
Q671 PN2222A
Q672 PN2222A
C674 0.1μ 50V
13Vp-p
SW.R
3110

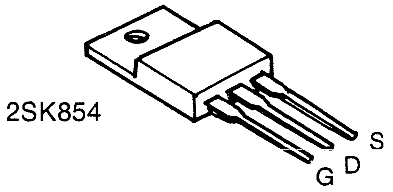

T601
L691
K1
+150V
0.08
~0.43A
K2
+80V
0
~0.2A
K3
TO MAIN PWB
"K"
+24V
0.6
~1.6A
K4
GND
TO CONTROL PWB
"D"
370V
13V
R624
15
1W
D612
RGP10B
C614
0.22μ
100V
R623
1.2K
1/4W
R602
47K
5W
C602
2200P
1KV
C601
470μ
400V
R603
200K
2W
R601
62K
7W
D606
BYV98E
Q602
2SD468C
Q603
2SD468C
D613
1N4148
R691
27
1W
C691
470P
1KV
C694
470P
1KV
D691
FMG26S
D681
FMG26S
R682
27
1W
C683
470P
1KV
C684
470P
1KV
C681
220μ
100V
L681
C682
100μ
100V
R681
2.2K
2W
C692
220μ
200V
C693
47μ
250V
R692
47K
2W
D651
D5LC20
L651
R652
1.5K
1W
PC601
TCDT1101G
R653
4.7K
1/4W
C652
220μ
35V
C653
0.1μ
C655
0.1μ
IC651
TL431C
K
R
A
C651
1000μ
35V
C656
1000μ
35V
R651
4.3K
1/4W
R659
4.3K
1/4W
C654
0.047μ
100V
R654
330
1/4W
R655
100K
1/4W
VR651
500
1/10W
R656
3.01K
1/4W
600Vp-p
D615
RGP10B
R604
22
1W
D608
RGP10B
C603
220μ
35V
C606
10μ
Q601
IRFPF50 or
2SK1358
D
G
S
VCC
C612
0.1μ
OUTPUT
GROUND
ISENSE
D609
RGP10B
R615
120
1/4W
R626
120
1/4W
R617
10K
1/4W
ZD603
HZ18-2
L601
FB
EOP3560
R616
2.7K
1/4W
C608
220P
1KV
C609
150P
1KV
R619
0.47
2W
R620
560
7W
D611
RGP10J
RL601
D671
1N4001
R672
10K
1/4W
D672
RLS4148
R674
22K
1/4W
Q671
PN2222A
Q672
PN2222A
ZD671
RLZ12C
R673
150
1/4W
C674
0.1μ
50V
C675
1μ
C671
100μ
25V
Q673
PN2222A
R676
2.2K
1/4W
R677
2.2K
1/4W
C673
0.01μ
13Vp-p

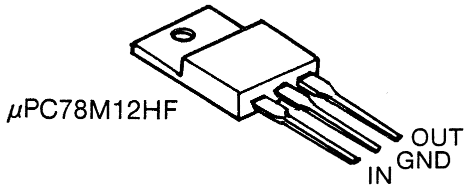
SW.REG.UNIT (SMP-120BB-1)
3110 4020

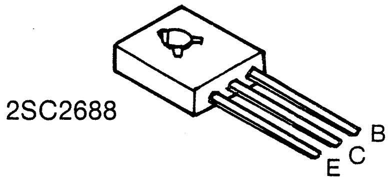

2SA1018
2SA1515
2SC1473
2SC3377
2SD468C
B
C
E

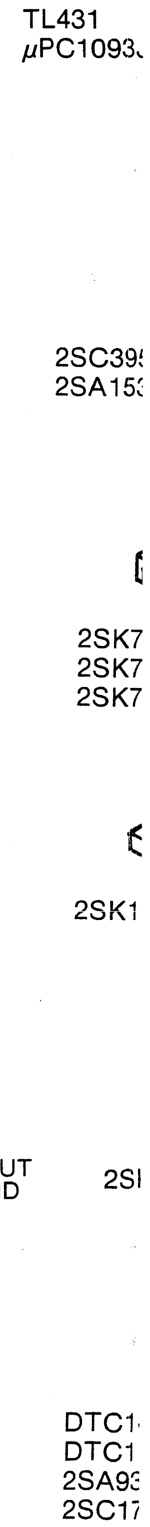

2SC3811
PN2222A
NPS2222A
C
B
E

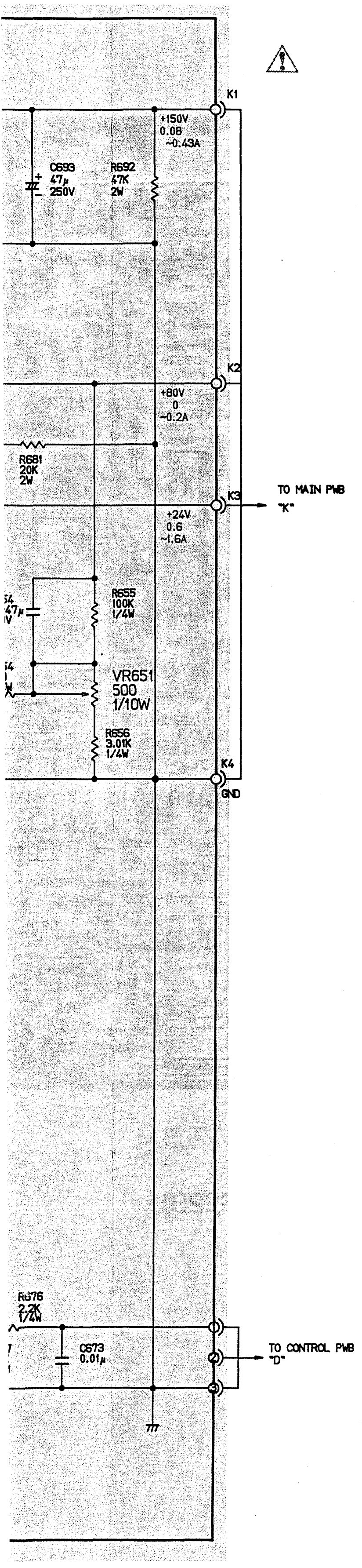

2SC3486
C
E
B



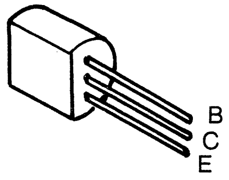

μPC78M12HF
OUT
GND
IN


2SC2688
B
C
E

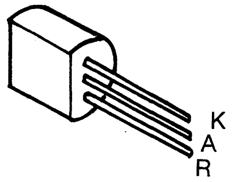

TL431
μPC1093J
2SC395
2SA153
2SK7
2SK7
2SK7
2SK1
2SI
DTC1
DTC1
2SA93
2SC17


K1
+150V
0.08
~0.43A
C693
47μ
250V
R692
47K
2W
K2
+80V
0
~0.2A
R681
20K
2W
K3
TO MAIN PWB
"K"
+24V
0.6
~1.6A
R655
100K
1/4W
VR651
500
1/10W
R656
3.01K
1/4W
K4
GND
R676
2.2K
1/4W
C673
0.01μ
TO CONTROL PWB
"D"

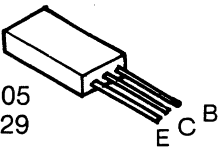
2SA1018
2SA1515
2SC1473
2SC3377
2SD468C



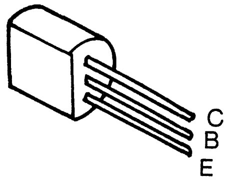
TL431
μPC1093J



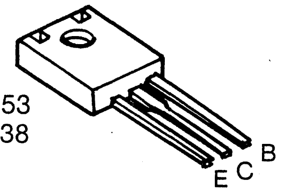
2SD2005
2SB1329



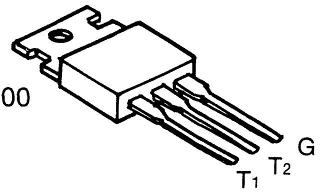
2SC3811
PN2222A
NPS2222A



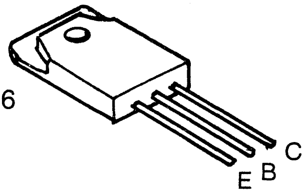
2SC3953
2SA1538



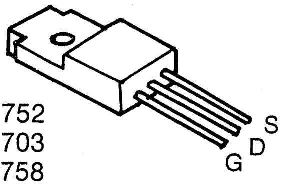
BT138-600



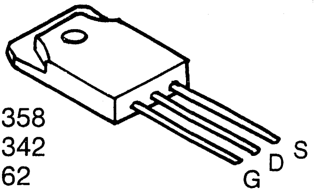
2SC3486



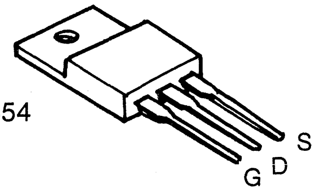
2SK752
2SK703
2SK758



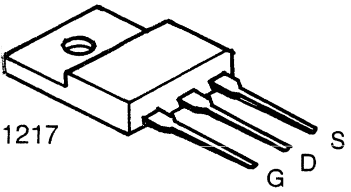
2SK1358
2SK1342
2SK962



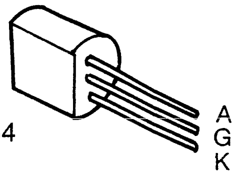
2SK854



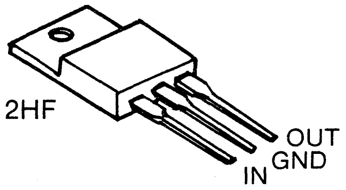
2SK1217



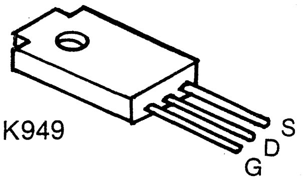
2N5064



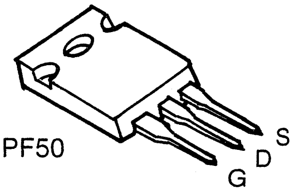
μPC78M12HF



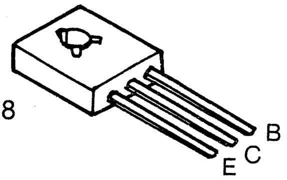
2SK949



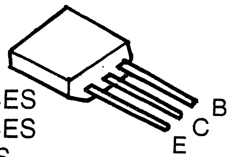
IRFPF50



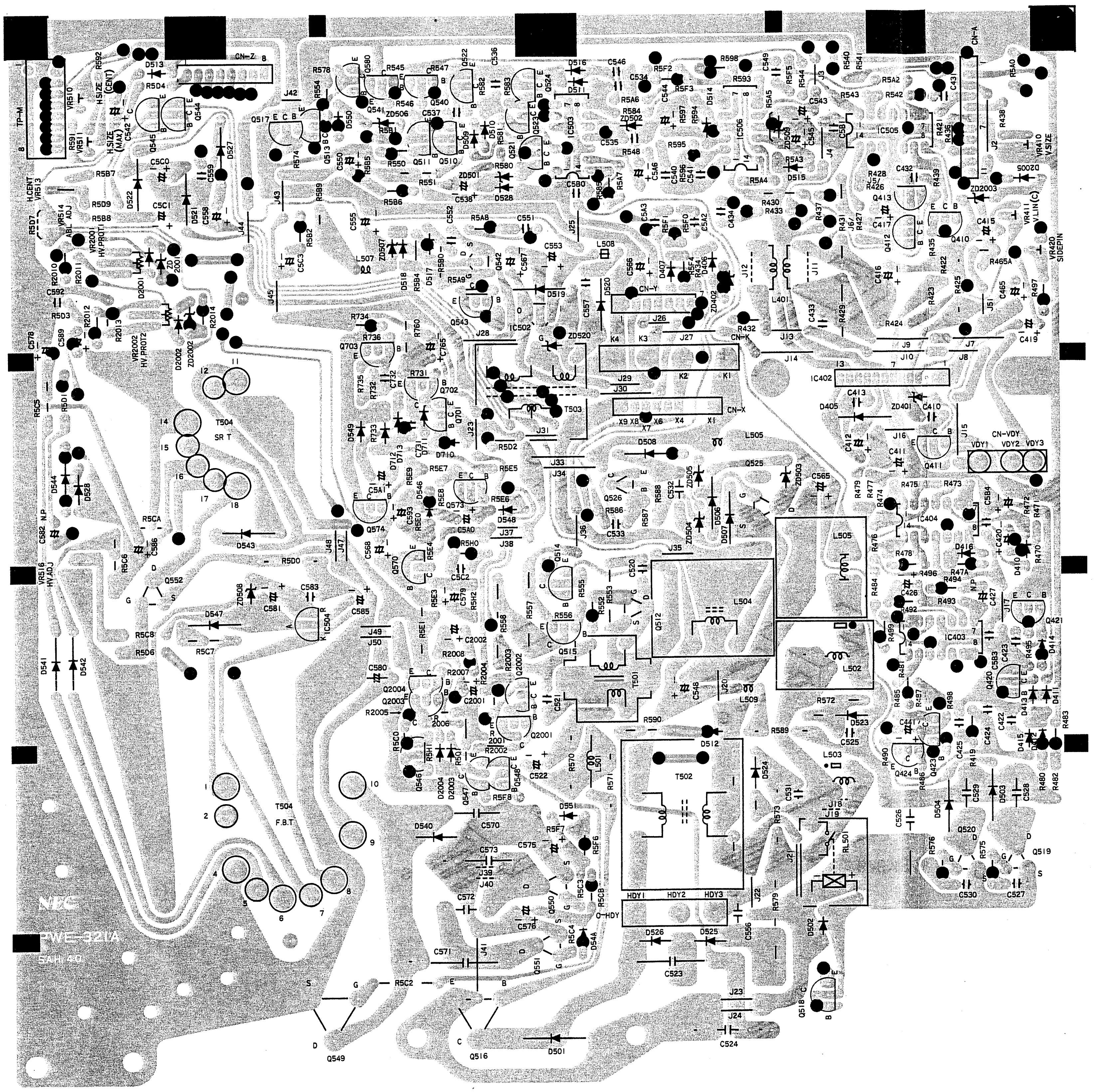
2SC2688



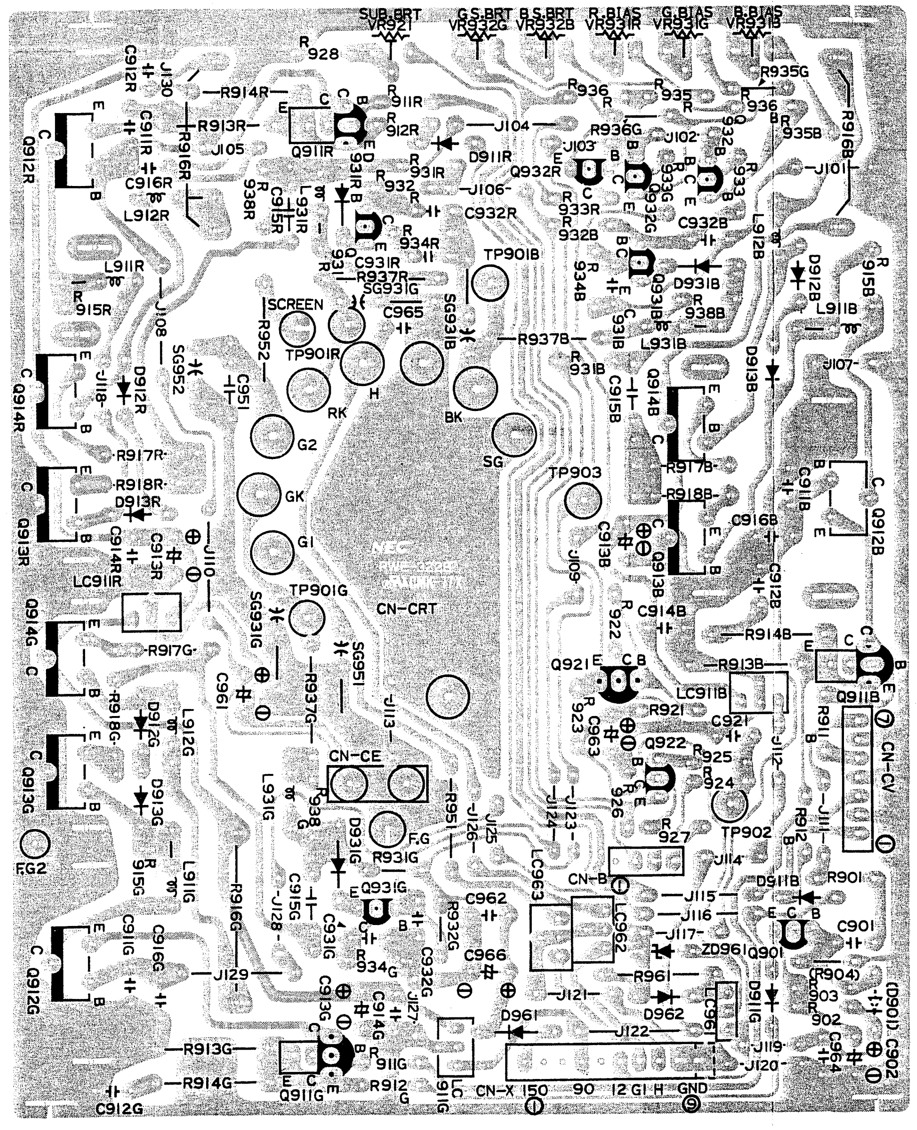
DTC144ES
DTC114ES
2SA933S
2SC1740S



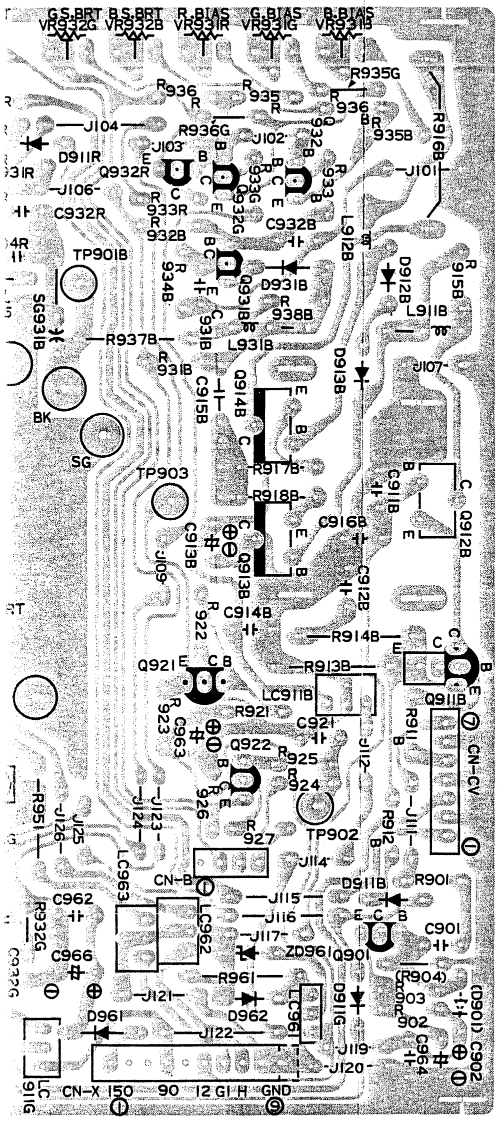
PRINTED WIRING BOARDS


CN-Z
TP-M
H.SIZE (CENT)
H.CENT VR513
CN-Y
CN-X
CN-VDY
VDY1 VDY2 VDY3
HDY1 HDY2 HDY3
T504 F.B.T
T502
T503
L504
L505
L502
IC402
NEC
PWE-321A

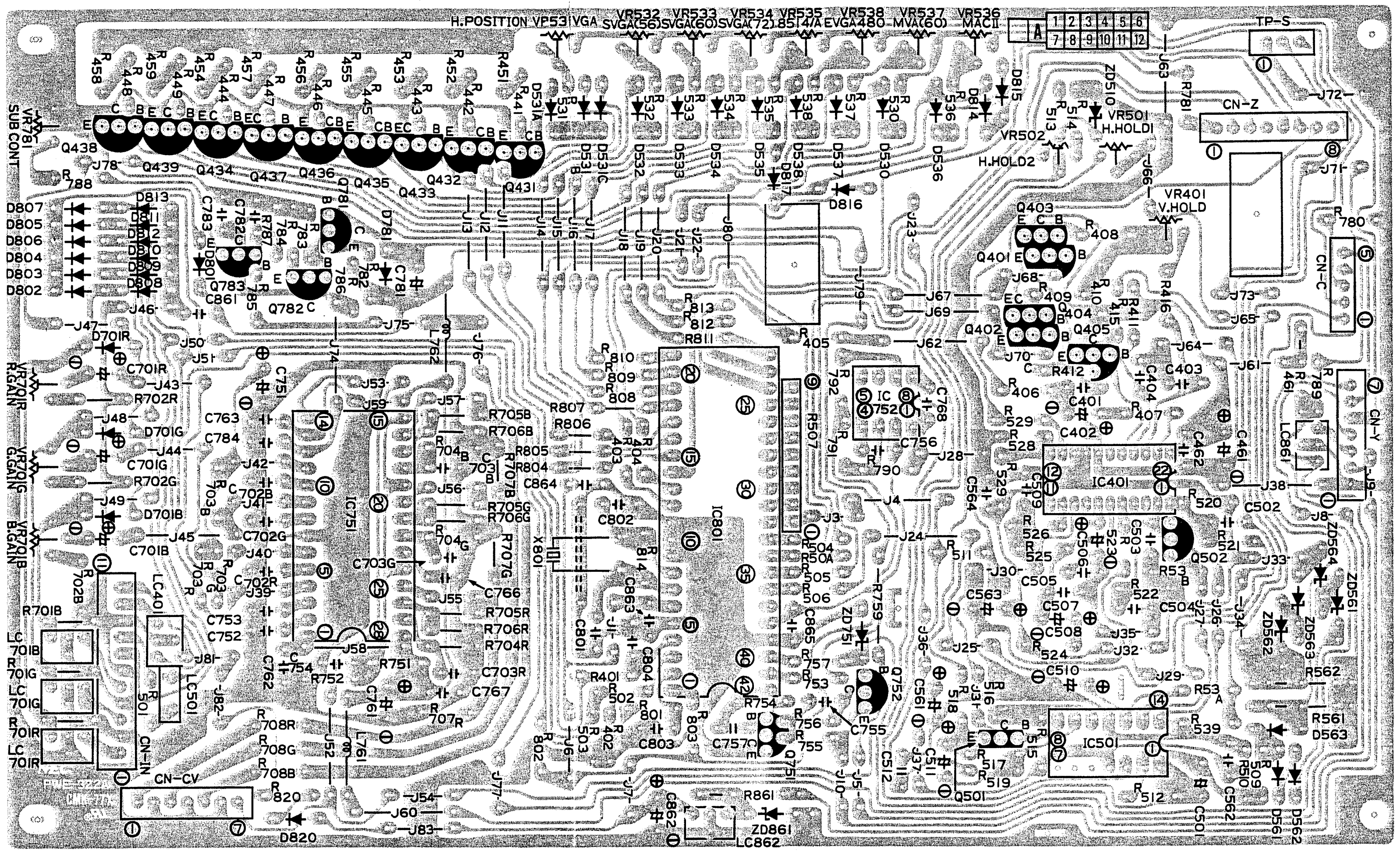
MAIN PWB ASSY (PWE-321)
—Solder Side—


SUB-BRT VR921
G.S.BRT VR932G
B.S.BRT VR932B
R.BIAS VR931R
G.BIAS VR931G
B.BIAS VR931B
SCREEN
TP901R
TP901G
TP901B
TP902
TP903
CN-CRT
CN-CE
CN-B
CN-CV
CN-X 150 90 12 G1 H GND

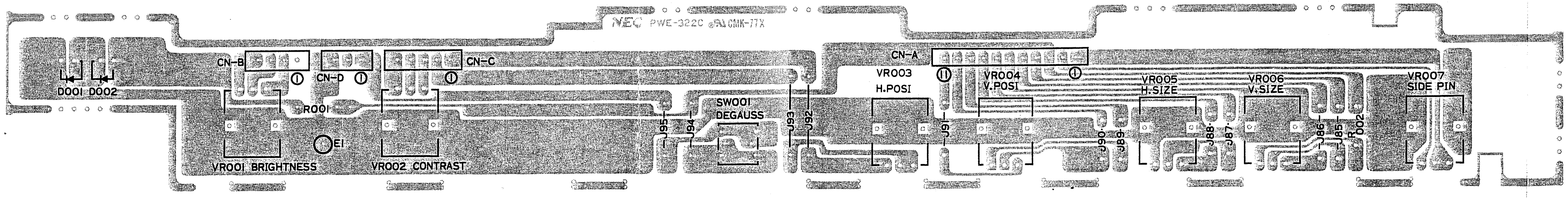
SUB (CRT) PWB ASSY (PWE-322B)
—Solder Side—


GS.BRT VR932G
B.S.BRT VR932B
R.BIAS VR931R
G.BIAS VR931G
B.BIAS VR931B
TP901B
TP902
TP903
CN-CV
CN-B
CN-X 150 90 12 G1 H GND

ASSY (PWE-322B)
der Side—


H.POSITION VR531 VGA
VR532 SVGA(55)
VR533 SVGA(60)
VR534 SVGA(72)
VR535 8514/A
VR538 EVGA480
VR537 MVA(60)
VR536 MACII
TP-S
CN-Z
CN-C
CN-Y
VR781 SUB CONT
VR701R R.GAIN
VR701G G.GAIN
VR701B B.GAIN
VR401 V.HOLD
VR501 H.HOLD1
VR502 H.HOLD2
IC751
IC801
IC401
IC501
IC752
CN-IN
CN-CV

SUB (I/F) PWB ASSY (PWE-322A)
—Solder Side—


NEC PWE-322C
CN-A
CN-B
CN-D
CN-C
D001 D002
R001
E1
VR001 BRIGHTNESS
VR002 CONTRAST
SW001 DEGAUSS
VR003 H.POSI
VR004 V.POSI
VR005 H.SIZE
VR006 V.SIZE
VR007 SIDE PIN

SUB (CONTROL) PWB ASSY (PWE-322C)
—Solder Side—